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THE
FLOWER GARDEN









HANDY BOOK
OF
THE FLOWER-GARDEN.

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HANDY BOOK
OF
THE FLOWER-GARDEN

BEING

PRACTICAL DIRECTIONS FOR THE PROPAGATION, CULTURE, AND
ARRANGEMENT OF PLANTS IN FLOWER-GARDENS
ALL THE YEAR ROUND

BY

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P R E F A C E.

JUST when circumstances had caused the Author to resolve on cessation, for a time at least, from all stated periodical writing, the Publishers had arranged to start *The Gardener*, and he was requested to contribute a series of papers on Flower-gardening. As these papers appeared, he was gratified by reports from many quarters that the instructions they conveyed were appreciated by and proved useful to their readers; and, especially from amateurs both in England and Scotland, of whom he had never heard before, the request, or rather suggestion, came to collect and extend the papers into the form of a book.

Such a reason as 'being requested to publish' is not regarded as sufficient for the appearance of this volume. The best apology the Author can offer is the conviction that such a publication is needed by many.

Literature, it need scarcely be said, is not his profession, but his pastime. As the manager of a garden which is generously thrown open to persons of all ranks, frequent contact with these has served amply to demonstrate the need there exists for a practical work of this description, now that so many are engaged in the culture of popular flowers; and he seeks thus to do his part in spreading more widely and minutely a knowledge of the pleasing art of flower-gardening.

The subject of laying out and making gardens has been intentionally avoided, believing that space is more profitably occupied with cultural directions, and in explaining the principles and practice of arranging flowers. It is, however, hoped that some, if not all, of the designs given may prove suggestive to those concerned in laying out or remodelling groups of beds in flower-gardens ; although their special object is to illustrate the principles which the Author conceives should guide the flower-gardener in planting. Simplicity instead of intricacy of design has been studied as being compatible with beauty, and most generally applicable.

To be practically useful to all classes of learners, has been the object throughout the whole work. The selection of plants and their treatment have been given, not from the florists' but from the popular point of view, and with an eye to general effect in flower-beds and borders.

ARCHERFIELD GARDENS, DREM,
January 10, 1868.

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INTRODUCTION.



THE practice of horticulture has been regarded as the most healthy employment and most delightful recreation in which human beings can be engaged. This remark holds good of all its branches, unless it be the forcing of flowers and fruits under glass, which is adverse to physical well-being. It is true that in the departments of culinary vegetables and fruits the important element of utility is of first importance; but even they are not without their pleasures of a satisfactory nature. The retired Roman emperor Diocletian was so pleased with watching the growth of the cabbages which he had planted with his own hand, that he refused to leave them in order to resume the reins of power. Doubtless, the originators of new fruits, such as the late Mr T. A. Knight and Van Mons, not to speak of more modern instances, enjoyed the most exquisite delight in cultivating and watching the progress of their seedlings, in realizing their gains, and in imparting them to the world at large. It is pleasing to enjoy the consciousness of skill applied, of diligence and power exercised, and of cherished expectation gratified at length.

Flower-gardening—the subject of this little work—has less of material utility than the departments just

referred to. It does not contribute to the substantials of the table, but it does to its elegances, and has numerous other and more refining attractions, which have always made it a favourite pursuit. If the late distinguished Prince Consort was right in calling horticulture one of the fine arts, it is this department of it which especially vindicates the name. It gives scope to the arts of design, and works with the most beautiful materials; it affords pleasure both to the artist and the observer; it exhibits to the greatest advantage beautiful flowers, which are amongst the most admirable objects of nature, and it presents them arranged, harmonized, and contrasted in the most favourable circumstances; it adds a grace to the magnificent country residence, the moderate villa, and the more humble cottage home; it imparts an interest to the oft-revisited flower-patch in the vicinity of large towns, where perhaps the pale mechanic or little shopkeeper, tending a few flowers, realizes the truth of Keats' celebrated line—

‘A thing of beauty is a joy for ever.’

Much sentiment might be expended in the pleasures derivable from flower-gardening, and much might be written on the elevating tendency of the study, culture, and arrangement of flowers, and of the joys that the sight of them is capable of raising in the hearts of the sorrowful and afflicted, and more than enough said to justify the exclamation, ‘Give me a fine day and a flower-garden, and I will make ridiculous the pomps and pageants of emperors and kings.’ They mistake the use of flowers who regard them as a mere luxury. Theirs is something akin to the office and power of the simple melody, which often fills the eye with tears

and softens the heart. The love of flowers is co-existent with the infant's dawn of consciousness, and lasting as life; and surely there was intention in the formation of the teeming multitude of flowers which meet the eye at almost every step. Science informs us, that though there were gigantic Club-mosses and Ferns in the earliest periods of the earth, there were no bright nor fragrant flowers till the era of humanity. They formed part of the preparation in that Eden home, where a delicately sensitive human organism and an emotional mind were to vibrate like a well-strung harp of a thousand strings to every influence from without. Reflecting the colours which stream in light from the centre of worlds, the influence of flowers cannot be regarded as anything less than one of the gifts bestowed by Providence to make the sweets of life outweigh its evils. Philanthropists are now more than ever recognising the moral influence of flowers as an auxiliary in raising the masses of our pent-up cities—only as an auxiliary, however; for potent though that influence be, it falls short of stirring the profoundest depths and touching the highest chords of our nature.

Having taken a glimpse within the threshold of the temple, and half bent the knee at the shrine where only poets and philosophers can acquit themselves, we retire to the less dreamy and chosen sphere of the practical.

The elder brethren of our profession, who can look back, for instance, to the introduction of the Dahlia, give us but a poor idea of flower-gardening as it was practised in the first decades of the century. Flower-gardens had then seldom a separate locality devoted to them; and when they had that advantage, they were generally composed of unshapely figures cut out in turf, and arranged,

as the designers fondly but erroneously imagined, after the principles of English gardening as inculcated by Wheatley and Uvedale Price. These figures were mostly filled with a miscellaneous assortment of Shrubs and Herbaceous Plants, many of which possessed only botanical interest. The Californian Annuals were then undiscovered in the Far West, and all the fine recent introductions were unknown and unthought of. Florist flowers, indeed, as they are distinctively called, were in some cases—if less formal and bright—not much less beautiful than they are now, and hence they received disproportionate attention. The consequence naturally was, that attention was almost exclusively directed to individual plants, instead of to general effect; and the progress of flower-gardening was very slow, till the improvement of existing species and the multiplication of beautiful varieties have rendered separate flower-gardens, suitable for the effects such flowers are capable of producing, if not absolutely necessary, at least highly desirable. Hence those highly artistic parterres that generally spring up close to every country seat. This, again, led to the well-recognised distinctions of the promiscuous (or mixed) and the grouping styles, and to the great change which has accordingly crept over the face of flower-gardens within the last thirty years.

In all that is of human contrivance, change is not invariably improvement. Whether this be the case in the change that has taken place in decorative gardening, is regarded by some as questionable. In this, however, as in most other things, individuals have yielded to the current of general sentiment and usage, and fashion is as tyrannical in the court of flowers as in any other. Whatever can be said either for or against the

modern style of grouping plants of one sort and colour together in quantities, so as to make each bed a distinct picture, and blend all into a harmonious whole, it must be admitted that the work of the gardener is now much more an art than it was a quarter of a century ago. The office of art is to educate the perception of beauty ; and if detaching objects from unmeaning and embarrassing variety be one of the virtues of art, it will be allowed that the present style of flower-gardening has a higher claim to that virtue than any that has preceded it.

To decry mixed borders of flowers of various heights and colours, and say that no delight is derivable from them, is not a proof of good taste. The simple perception of natural forms is a delight, and all the works of God have a general grace diffused over them. And while it is assumed that if a gorgeous and imposing picture is to be attained, it must be by massing and blending distinct colours together, I have not, at the same time, any sympathy with those who cannot recommend the one system without condemning the other. He conceives meanly of our resources who thinks the best of flower-gardening is passed or accomplished in either the one system or the other.

The massing style, so much in the ascendant at present, can justly claim more impressiveness—an effect upon the mind so vividly illustrated by the effect produced upon the poet's mind by the 'dancing daffodils,' the remembrance of which, because seen in quantity, filled his heart with pleasure while he lay upon his couch. A single or a few daffodils would never have led him to immortalize them in verse, as did the 'dancing sea of daffodils' by the shore, which, as the poet puts it, 'outdid the sparkling waves in glee.'

It is not, however, a primary object to balance the merits of the old mixed style of flower-gardening against the present popular style of massing. To do so would not only be a fruitless task, but a gross injustice to both systems—to set them up as rivals for popular favour. They are distinct in principle, and alike applicable to certain and distinct positions. There is, consequently, as little room or reason why both systems should not add their distinct charms to our gardens as there is for playing the one off against the other. The one should not, and cannot, entirely displace the other. Each should have its own niche; and when a fitting niche cannot be commanded for both, circumstances must decide which shall have the preference.

The requirements of my employers, and the adaptability of the gardens I have had to work upon, have devolved upon me a very considerable amount of thought and practice in the grouping system. This does not cause me to attempt shielding the favourite style from any faults with which it can be fairly and legitimately charged. At the same time, it is submitted that those who have most severely and sweepingly condemned it, have done so without sufficient thought. It cannot be denied that there is enough in a border of hardy herbaceous plants, with a few annuals and half-hardy plants mixed in, especially when the selection is judicious, to gratify the keenest sensibility to that which is both gay and interesting. But that is a very different thing from holding, that under all circumstances, and particularly in those geometrical and architectural groups of beds which compose so many of the flower-gardens in proximity to mansions, the promiscuous system is the best, or that, indeed, it would not be entirely out of place.

Such is not the niche for mixtures of the olden sort. They must give place to a system of grouping in accordance with the surroundings.

The comparatively shortlived display is one of the arguments which has been often urged against composing our flower-gardens entirely of half-hardy plants:—that it would be much less objectionable could the season of full bloom be greatly protracted. It is to my mind questionable whether this be either a well-founded or philosophical ground of objection. Such an objection need not necessarily exist. Vacant beds can be filled up at once with abundant material for an early spring display, or even with a variety of beautifully ornamented shrubs where families are resident in winter. Both systems, as circumstances demand, are now practised, and in these ways the bareness is more effectively remedied than is possible when the summer and autumn shows are principally dependent on permanent herbaceous plants. The argument is consequently not well founded; neither is it philosophical. Would the charm of our summer and autumn galaxy of bloom not cease to produce those pleasant emotions with which it is contemplated, were it possible to sustain its *sameness* all the year? To the attentive eye, each change in the seasons brings its own peculiar beauty and charm. If, instead of change, we had one continuity of song, leafy woodland, and flowery garden, would it not become monotonous, and cease to be a source of exquisite pleasure to the mind? Lovers of flowers ought to be thankful that the year and the human heart have room for changes.

Vulgarity is one of the epithets which have been applied to the present style, and I will not undertake to say this is not in some cases correct. But that does not

prove anything beyond the fact, that the art of disposing of flowers in beds and borders is not correctly understood by all. Such, however, cannot be accepted as proof that the most chaste and refined effects cannot be, and are not, produced by disposing of masses and lines of plants with various shades of colour. Properly worked out and understood, the pleasure of the parterre becomes one of intellect; and long may it form a part of our gardens! Its object is, in some cases, I fear, confounded with purely botanical science; but it is folly to contrast or compare the one with the other.

If the first attempts at grouping, with the view to contrast and harmonize their colours, were hailed as at least a most desirable feature in flower-gardens at a time when suitable plants were much less plentiful than they are now, and when the art of disposing of them effectively was in its infancy, it would surely be a great and desirable feature lost were the whole thing, in its now improved condition, swept away, as some have predicted that it will be.

The object of the following pages is to give plain practical instructions how to propagate and cultivate such plants as are suitable for the grouping system, as well as for mixed arrangements of hardy and half-hardy plants, and practical illustrations of grouping them in various ways beside the humble cot and lordly hall. And I am happy to think that many of our hardy plants, as well as bulbs and annuals, that can be managed with the feeblest resources, are among the most effective for planting in masses and lines. These have, therefore, the additional recommendation of being available, not only by the wealthy, but by the many, with the simple plot before the door. These latter, as

well as the well-to-do amateur, with perhaps a tiny greenhouse and frame, are included among the objects of the following pages; for I conceive that it is erroneous to estimate the merits of, or the pleasure derivable from, a flower-garden, more by its extent than by its arrangement and keep. One bed well planted and well kept will be more a fountain of pleasure than an incongruous jumble, however extensive. Mere extent in flower-gardening, without a proper order of things, becomes only the more ridiculous and repulsive in proportion to its extent. My purpose, therefore, in this treatise, is to embrace the many; and I trust what I have to say may, however feebly, help forward and stimulate in the proper pursuit of an object that may be reckoned among those which afford the most wholesome relaxation and the purest of earthly enjoyments.

The promiscuous or mixed style of Flower-Gardening.

—The promiscuous or mixed style of flower-gardening which preceded the present, might be characterised as an attempt at spring and summer display combined; but the effects that are now produced by what are distinctly known as spring and summer and autumn flower-gardening, were not approached at any given time. The mixed style was carried out with less regard to any definite expression or effect, and certainly with little or no regard to the laws of colour. Notwithstanding, it must be said of it that a general interest was maintained for a good part of the year. Hardy herbaceous and Alpine plants, and in many cases a mixture of roses and dwarf flowering shrubs, were generally planted with more regard to their various heights than to their time of flowering, or to the harmony or contrast that might

exist among them. In fact, a good mixture was the chief object attained, if not the one kept in view ; and as the spring-flowering fraternity either died down or went out of flower, their places were filled up with annuals till perhaps the beginning of June. In this way a very considerable amount of bloom was kept up from the latter part of spring all through the summer, but, it must be admitted, without any striking design or effect.

Much could, no doubt, be and is said in favour of this promiscuous style, and probably the most weighty argument in its favour lies in the fact, that it was less expensive and far less laborious than that which is more the fashion now. It is no wish of mine to depreciate in any way this order of gardening, but the reverse. But it must be admitted that many of the plants which occupied prominent positions were anything but graceful objects, lashed tightly to stakes like sheaves of corn ; and the unsightly appearances and unmeaning aspect of such borders in autumn, to say nothing of the barrenness—which somewhat unfairly has been charged to the massing system—that prevailed for a considerable period of the year, formed a very serious objection against it. That this mixed system has been greatly improved by making selections instead of collections of plants, and by paying more regard to colour in arrangement, is beyond a doubt ; and that mixed borders, in which a limited selection of very effective hardy plants is now used in combination with Dahlias, Salvias, Phloxes, Antirrhinums, Stocks, Asters, Marigolds, and several other Annuals, as well as Pelargoniums, Calceolarias, and other plants properly termed bedding-plants, can be made very effective and showy, and most desir-

able for certain positions, as well as for the sake of variety, requires no proof. The very best proof and example of this style that I know of has been carried out for years at Bothwell Castle, in the long border which forms one of the boundaries of the flower-garden there, and which, under skilful management, maintains its interest to the last. The position selected for the mixed system here referred to is very suitable, and the way in which it is executed unsurpassed by anything I have seen.

To recommend such a border is a very different thing from holding it up as adapted for pure parterre work in certain positions, or for many designs. There can be no doubt that to produce the most effective display of bloom in groups of beds for the largest possible time, it must be done by a distinct set of hardy plants for spring show, to be replaced early in June by the class of half-hardy and hardy plants, all of which are treated of in this work, and which, for effect in summer, autumn, and spring, cannot be excelled.

Remarks suggestive of Improvement.—Flower-garden-
ing has made very considerable progress within the last few years. The improvement is prominent in two distinct features. The plants at the command of the gardener, generally speaking, are much improved both in extent of variety, and brilliancy and variety of colour, and the art of arrangement has made equal progress. Indeed it has been hinted that some of the sections of plants are scarcely susceptible of much further improvement; and as to arrangement, it might almost be said that the plants at our service have already been used in every conceivable arrangement and relationship

to each other, and that there cannot be much to achieve within the limits of good taste in this direction. If this be near the truth, and the rate of progress is to be maintained, and the interest in flower-gardens freshened, we must necessarily look to a new order of plants more than to fresh designs executed with those we already possess. I am sanguine enough to hopefully anticipate the former, and the latter will of necessity accompany it.

It is not by any means vain to hope that there are yet much grace and elegance—we have no lack of colour—to be added to our parterres. Already something that is at least suggestive has been attempted in a very few favoured localities. Some plants which thrive best when strictly confined to our stoves and warm greenhouses have been grouped outdoors. To such efforts we owe much, and the observant cannot fail to profit from whatever measure of success has attended them. There are, however, few places in the United Kingdom where it would be anything short of hopeless to attempt outdoor decoration with such plants as are most at home in a tropical climate.

Notwithstanding the insurmountable obstacle which climate throws in the way of introducing sub-tropical decorations into our flower-gardens, I consider it very desirable, and surely not beyond ultimate attainment, to work into a hardier class of plants, resembling, in grace and elegance, those tender plants which can only be seen in real health and beauty in plant-stoves. Hardy plants, such as I have referred to—or rather the multiplication and use of them—are one of the greatest desiderata of the modern flower-garden. A most desirable and attractive feature is being added to the arrangement of beds and borders by the introduction of

the order of plants that I have indicated, and very similar effects to those that can be produced by sub-tropical plants are attainable by a liberal use of many half-hardy and nearly hardy plants already enumerated in the nurseryman's list.

Greenhouse *Dracænas*, *Yuccas*, *Aloes*, *Cordylines*, *Agaves*, *Grevilleas*, *Cycads*, *Araucarias*, etc. etc., may be mentioned as a few among many indicative of the order of plants for which I am pleading, and which I hope will one day become popular for this purpose. As centres, starting-points, panels, vase plants, etc., surely it is not hopeless to recruit from such ranks. A dozen, a score, forty, fifty, or a hundred such plants, according to the capabilities and extent of the place, would add greatly to the beauty of many a garden. The annual housing and plunging of these would not require much more space nor labour than those plants which they are designed to displace. And there cannot be a question as to the wisdom of curtailing, in a measure, the prevailing weight of colour to make way for plants with graceful foliage. The selection of such plants need not be confined to such as require protection of any sort in winter. Many of our perfectly hardy shrubs and trees can be used in a young state with very striking effect, and I hope the training of such in special ways for this purpose will one day be well worth the attention of nurserymen. With the introduction of more graceful and ornamental foliaged plants, a striking improvement may be expected on the present brilliant order of flower-gardening.

There are other considerations which are especially calculated to work improvement. The first of these consists of a more intimate and widely diffused know-

ledge on the part of those who are the proprietors of gardens, of the vast increase of labour which has arisen in consequence of preparing and cultivating so many tender plants as are demanded by modern summer flower-gardening, and all without anything like corresponding resources in the way of houses and pits for propagating and growing such numbers of plants. The extent to which this is the case is but little thought of by proprietors, and the energy and resources of the present generation of gardeners are wonderfully exemplified in the production of tens of thousands of plants, with the most unsuitable amount of accommodation.

Another important consideration, in prospectively contemplating improvement, lies in the undue amount of extent, on which, in many instances, flower-gardening is attempted to be carried out. Proprietors and gardeners, too, are alike in fault in this matter,—the one from the idea of enlarging the sources of their enjoyment, the other with the view of getting more scope for displaying their taste and skill. Instead of realizing this, it may perhaps be considered bold to say that few things would tend so much to the improvement of flower-gardening, in a general way, as that the area over which it is attempted should be reduced by one-third. Surely it is more desirable to have fifty beds about a place well filled and arranged with choice plants, than twice that number made up indifferently. And then there is the most important matter of dress and high-keeping the whole season, than which there is not anything else that so much affects the enjoyment and comfort of all concerned. The greatest possible amount of flower-gardening cannot be pleasing, or contribute to the enjoyment of ladies and gentlemen with any pretence to refined taste,

unless a high state of cultivation and neatness prevail. Half the number of plants, with the same amount of labour properly applied, would be more certain to minister enjoyment, and tend to advance the art. One bed of flowers may be made to attract more attention and cause more admiration than a great number; and the smaller groups of beds may be made far more attractive than the larger, if attempted with the same means. Flower-gardens are not to be disapproved of merely because they are large. The larger the better, if the means allowed be in proportion. What is contended for is, that a small garden, well arranged and highly kept, must, in the nature of things, be far more productive of enjoyment, and tend more to the advancement of the art, than a larger one, out of proportion to the means of its owner, and consequently badly kept.

Another matter which would tend greatly to advancement is, that one of the elementary and important principles of flower-gardening—namely, the harmonizing and contrasting of colours—should be more studied than it is. There are few things more certain than that any one who attempts to arrange plants in a flower-garden without a knowledge of the general principles upon which the harmonizing and contrasting of colours are founded, will make mistakes. This is maintainable as a general rule. At the same time, there are some combinations that set the laws of colour at defiance, and are yet most pleasing. There is nothing easier than to become conversant with this subject; and it is my intention to show how the harmony and contrast of colours can be easily decided by those who have not hitherto studied the matter.

CHAPTER I.

REVIEW OF THE PRINCIPAL GENERA MOST SUITABLE FOR SUMMER GROUPING, ETC.

THE number of beautiful plants which have been furnished to the flower-gardener of the present day, and the well-matured experience in making judicious selections for various soils and climates, give us considerable advantage over those who were the pioneers of the grouping system. Nevertheless, we must not consider that anything more has been attained than a favourable stand-point, from which a still improved order of things can be descried. And if it be true, as doubtless it is, that so extensive a use of comparatively tender plants has led to the neglect of many an interesting hardy border-plant, all has not been loss. That wonderful law of compensation which pervades the universe has not been absent here. In proof of this, we have only to review the many beautiful half-hardy plants which have been added to our lists, and have disputed so successfully the position of popular favourites. And should the current of popular taste ever flow more than it does at present in the direction of mixed flower-beds and borders of hardy plants, there must be a compromise. Selection from both the hardy and half-hardy orders of plants is creeping on just as fast as it is being discovered that some desirable feature or effect is gained; and thus, by a

sort of mutual concession, the flower-garden will be furnished with judicious selections, and not with an *omnium gatherum* of all sorts.

In taking a retrospective glance at some of the plants which are now so extensively used, it cannot fail to be abundantly apparent to those who are conversant with the plants which formed, as it were, the dawn of the grouping system, that the improvement in some cases has been wonderful, and in nearly all very considerable indeed. Thirty years ago, the very headquarters of flower-gardening were all but entirely destitute of anything in the way of Pelargoniums that would now be tolerated, unless as a curiosity. The *old* Horse-shoe among Zonales, and *old* Frogmore among plain-leaved scarlets, were the gems of those days. In variegated Pelargoniums the poverty was even deeper still ; and as for the tricolor-leaved sort, they were never dreamed of nor hoped for. General Tom Thumb, the history of which is more like romance than reality (in being saved from a dust-bin, where, after the tender mercies of a nursery of children, it was cast to die the death of an unproved seedling), led the way in improvement ; and, in company with *new* Frogmore, the plucky little General has marched through many a gaudy garden, and probably they have held their ground for a greater length of time than any others. Globe Compactum and Shrubland Superb led the way among sorts with zoned or horse-shoe leaves ; and, when properly managed, both varieties are very effective, although dark-zoned leaves are not now so highly prized in a bed of scarlet-flowered Pelargoniums. About 1850, Flower of The Day commenced the era, and a new race of silver-edged varieties. And what have we now ? It would indeed be difficult

to say how numerous these varieties are, and more difficult to describe their beauty and adaptability for one purpose or another. From pure white up through the various shades of pink, peach, rose, cherry, salmon, scarlet, to crimson of various shades, with foliage of all shades of green, to say nothing of the shimmering beauty of the creamy, silver, golden-edged, and bronze varieties, we have them, thanks to the skill and energy of hybridizers and sport savers ; and all culminate in the gorgeous tricolor-leaved varieties, which almost combine, in one leaf, the colours of the rainbow, and vie, in beauty of marking, with the tenants of our stoves.

Looking at Verbenas, I cannot help recording my conviction, that the present principle of arranging plants in masses owes them very much, perhaps more than any other genus of plants. The introduction of the *Verbena* had a very considerable share in the advent of the grouping style, and helped to establish it. Verbenas made dense and dwarf masses of long-continued and brilliant colours possible, and were found of easy culture. For bedding purposes, perhaps, the improvement has not been quite so striking as in *Pelargoniums*. The desirability of growing only such varieties as will stand rains the best, combining distinctness of colour with a compact stiff habit of growth, good foliage, great substance of petal, and a prolonged profusion of bloom, has very much contracted the choice of Verbenas. Still, making such points as these the standard of merit, we have very fine sorts which could not be well spared, and which, for producing a long-continued mass of colour, cannot be excelled. It is singular that in the way of foliage no very striking improvement has been accomplished. Could we possess a purple or blue

variety, with silvery leaves, it would be a great acquisition. As a distinct species, now more generally pressed into service, what can excel *Verbena venosa*? It stands unrivalled by any other for producing a mass of purplish violet that withstands all weathers; but in cold, late localities it does not succeed. A pure white *Verbena*, with the habit and profusion of the Purple and Crimson Kings, would be one of the greatest acquisitions to the parterre. Some have been recommended as coming up to the bedding standard, but we have not found them to do so.

The work of improvement in that style of *Calceolarias* which are suitable for planting outdoors, and that keep up a long succession of bloom, has not been so striking as in the *Pelargonium*. Nevertheless, since the days when *C. rugosa* and *C. angustifolia* were the best, much has been gained. It is only necessary to point to the gorgeous masses and lines of yellow and orange-yellow produced by such varieties as *canariensis*, *aurea floribunda*, *aurantia multiflora*, *Kayii*, and to the intermediate bronzy colours, up to the magnificent crimsons of our *Havelocks*, and more especially *Ambassadors*. These few give heights and habits of sufficient variety to make them suitable for the smallest and largest beds, while all of them are very suitable for lines.

Of *Dahlias* a new race of dwarfs has been furnished for comparatively dwarf groups and lines. True, some of these are not such in their individual blooms as would be looked upon by a florist with much complacency, but they yield a compact and long-continued profusion of blooms of pure whites, purples, scarlets, crimsons, yellows, and various other shades. For back lines and large beds they are very useful, and with-

stand rains about as well as any flowering plants. I think perhaps the most telling group I ever saw was chiefly composed of Dahlias.

We have now a few varieties of Stocks which are most effective. It may be said that, in some localities at least, the grouping system has done much for Stocks, and they have done much for grouping. It has led to so careful a selection of seed, that we have now scarlets, purples, and whites which, in colour, habit, profusion, and long-continued blooming, are perfectly unique. Of these, five-sixths invariably come double. Indeed it is difficult to get singles enough among the purple and white to perpetuate them. They are, moreover, so hardy, that all the care they require is to be sown under a common handglass in spring, and they are generally in flower from the end of July till December.

Many can remember when our dwarf pale-blue Lobelia, such as *gracilis*, was a cherished pot-plant for front shelves in greenhouses. Now, in *L. erinus speciosa* we have an intense blue, which is admired by all. A better blue colour is hardly possible in Lobelias. What flower-gardeners have often wished for is a plant of the same colour, about a foot high, and of upright stubby growth, to take a premier position in various combinations. *Salvia patens* is too straggling and uncertain except for mixed borders, and, especially on light soils, hot weather tries it much. *Plumbago larpentia* some eighteen years ago was sent out to fill up the want, but it signally failed. *Lobelia Paxtonii* must be acknowledged as a recent acquisition, and in some positions as useful and effective as *speciosa*. The white variety sent out recently has proved a complete failure; but I am not without hope that a good dwarf white Lobelia will

one day be got as a sport from *Paxtonii*, if not in any other way. I have seen some of that variety all but white.

In *Tropæolums* we have quite a new race. A good many are too strong-growing for damp rich soils. There is, however, *T. Cooperii*, than which few plants will more effectively cover the ground with a sheet of bloom; and I have seen it fine up till November, so well does it stand damp weather. *T. luteum* improved, as a yellow compact grower, is equally good. Their green foliage and dazzling scarlet and bright yellow flowers form the most unique contrast imaginable. Then there is *T. King of Tom Thumbs*, and others of compact upright growth, rivalling in some soils the scarlet *Pelargonium* itself.

Who can look at the glowing beauty of *Gladioli* without being struck with the wonderful improvement which hybridizers have effected in them? We have only to look at *Gandavensis* and *Psittacinus*, and compare them with such a progeny as *Brenchleyensis*, *La Poussin*, *Meyerbeer*, *Prince of Wales*, *Dr. Lindley*, *Lord Byron*, and a hundred others, to see how much superior our material in *Gladioli* is, as compared to that of the past.

And what shall we say of *Roses*? Their name is legion, and their beauty perfectly wonderful. The great difficulty of the gardener now-a-days is to select the best. Some of the sections are admirably adapted for beds; such, for instance, as the *Chinas*, *Bourbons*, and *Perpetuals*, which, at several seasons of the year, yield a magnificent profusion of bloom. To point out the wonderful improvement which has been wrought in the *Rose*, would indeed be needless. But for purely *parterre* work

we would not recommend their use very extensively, as there are certain seasons when there is a pause in their blooming—except, indeed, it be Chinas—that would mar the unity of designs; and for that reason I would recommend them to be grown in beds or borders by themselves; and what can be more charming in its way than a rosary?

Among plants with grey or almost white foliage there is *Centaurea ragusina*, which, but for the present style of flower-garden decoration, would more than likely have been all but lost to the country, but which is now one of the most popular and effectively used plants. It is most charming and graceful for many purposes, and for some it stands unrivalled. *C. argentea* and *C. gymnocarpa* are also very pretty and useful plants.

Cineraria maritima, *Stachys lanata*, *Cerastium tomentosum*, and *Cerastium Biebersteinii* are, for their various positions, most effective. These silvery-foliaged plants have added a softening touch to parterres which would now be much missed were it withdrawn.

In variegated plants we have most useful dwarf edging-plants, such as *Arabis lucida variegata*, *A. alpina variegata*, *A. mollis variegata*, variegated Balm, *Dactylis glomerata variegata*, *D. glomerata variegata elegantissima*, *Poa trivialis argentea elegans*, *Veronica pumila*, *V. speciosa variegata*, and, most beautiful of all, *Polemonium cæruleum variegatum*; and, for positions where taller plants are required, there are *Scrophularia nodosa variegata*, and a few others, nearly all of which have the great recommendation of being quite hardy.

Crimson and dark foliaged plants are being yearly added to contrast with the greys. Already we can enumerate *Perilla Nankinensis*, *Iresine Herbstii*, *Coleus*

Verschaffeltii, *Amaranthus melancholicus ruber*, Orach, *Oxalis corniculata rubra*. Some of the dark-crimson foliaged Beets are in many cases used with excellent effect, though some object to them because they have an edible tuberous root. One or two more plants are candidates for favour in this class, among which are *Alternanthera* and the hardy *Ajuga reptans rubra*. The *Coleus* and *Amaranthus* succeed well outdoors only in the southern part of the kingdom. Doubtless the class of plants with coloured foliage will be recruited as time creeps on; for, strange to say, when a want is felt, it is generally supplied in time.

The best variety of *Viola cornuta* has risen very rapidly into favour, and deservedly so; for it is a most useful plant for small beds and margins, and its colour is very pleasing. It is perfectly hardy, and affords another instance of how old hardy plants are becoming most useful in the parterre. There are, besides, *Viola montana* and *Viola lutea*; but of the former of them I have not much favourable to say. Though it has been recommended, I do not consider it worth growing. The common blue, purple, and yellow Pansies are most useful additions in the way of hardy plants: they flower nearly the whole year round; and Imperial blue, recently sent out, is a great acquisition.

Then what can be more effective than *Tritomas* for back lines? Of these there are *T. uvaria* and *T. grandis*, which, if planted alternately, keep up a fine line of bloom for four or five months. The latter begins to bloom when *uvaria* ceases, and it is frequently fine at Christmas.

I might continue thus to allude to many plants that are suitable, and of which the pioneers of the massing

style had not the advantage—some not at all, and many not in such fine varieties as we now possess. All, too, are most suitable for the mixed border, as they have great blooming powers. But I will not occupy space by so doing, any further than simply to name such plants as *Gazania splendens*, *Tagetes signata pumila*, both first-class plants for keeping up a lengthened profusion of bloom. Then there are *Antirrhinums*, *Dianthus*, *Fuchsias*, *Heliotropes*, *Hollyhocks*, *Pentstemons*, *Petunias*, *Phloxes*, *Pyrethrums*, *Salvias*, and many others, besides annuals, all of which are most useful for certain purposes, and many of them for beds and lines. And it need scarcely be affirmed, that nearly all of them have been much improved of late years ; so that, beyond any doubt, the flower-gardener of the present has a much more superb fraternity of plants with which to keep a garden beautiful, than his predecessors had. And it need scarcely be said, that the plants which have thus been briefly passed in review do not include those which are mere candidates for public favour and position, but all of them have been well tried and approved ; neither do they include a class of plants which have been cursorily referred to, as most desirable candidates for being more plentifully used in the flower-gardening of the future, and which, as has already been pointed out, are well calculated to add to it much elegance and grace.

It is now several years since, in the pages of the *Scottish Gardener*, I advocated the use of many of the gracefully-foliaged plants which can be wintered in a greenhouse temperature, and that will therefore bear exposure outdoors all summer and autumn with impunity ; and from the fact of their comparative hardiness, as well as beauty of form, they must, in a general way,

occupy the position which has with some success been given to tropical plants in a very few favoured localities. It is pleasing to me to find the very same ideas advanced recently in a leader in the *Gardeners' Chronicle*, and the very same plants named that were spoken of by me as being those which, for the further improvement of the flower-garden, must become popular, instead of those that will only thrive in the temperatures of our stoves. A list of such plants, with directions for disposing of them in beds and borders, in ways which, I think, will greatly enhance the interest and beauty of the flower-garden, will be given in a future page.

CHAPTER II.

PROPAGATION AND GENERAL TREATMENT OF PLANTS MOST SUITABLE FOR SUMMER AND AUTUMN DECORATION.

ALTHOUGH it is my intention to treat of the majority of the plants according to alphabetical arrangement, I am induced to depart so far from that general rule as to give especial prominence to a few of the leading subjects, by treating of them in a more distinct and extended manner first. Proceeding on this principle, I have no hesitation in selecting and beginning with the Pelargonium as the chief of flowering plants suitable for the parterre.

WHITE, PINK, SCARLET, AND OTHER VARIETIES OF PLAIN-LEAVED AND ZONALE PELARGONIUMS.—*Autumn Propagation and Winter Management.*—About the 12th of August is the best time to begin the propagation of these Pelargoniums. By that time the plants have made a vigorous and firm growth, and the beds and lines are generally so well filled up that a couple of cuttings from each plant will not affect the appearance of the garden. In choosing the cuttings, take as many of them round the outside of the beds as can be had. They are usually short-jointed and firm, and make finer plants than when long-jointed and immature. Large cuttings are in all respects preferable to small ones. They are

less likely to damp off, strike sooner, stand the winter better, and require less coaxing to grow them into good plants in spring; and they bloom earlier than plants raised from the mere points of the shoots. Unless it be some of the very dwarf varieties, the cuttings should be about 9 inches long—some of the strongest growers even more than that. In selecting and making them, every care should be taken not to bruise them; for if the stems are bruised, they are more subject to damp off. In making them, cut the bottom end off, close to the first leaf, with a sharp, thin-bladed knife; remove the leaves close to the stem up to the third joint. They are then ready for insertion, which should be attended to before the cutting becomes flaccid. They should be dibbled in with a dibble considerably thicker than the cuttings, so that the hole is sufficiently large to allow of them being inserted without abrasion.

Boxes $2\frac{1}{2}$ feet long, $1\frac{1}{2}$ foot wide, and 4 inches deep, are excellent for striking in. In each box there should be nine auger holes for drainage, and over each hole a single crock. Then prepare a compost, consisting of one part loam, one part leaf-mould, with a fourth of the whole of sand. This should be passed through a half-inch sieve, to separate the roughest part, and thoroughly mix the whole. A thin layer of the siftings should be placed over the bottom of the box, and then fill up to the rim, and press firmly, especially round the sides of the box.

Sixty cuttings of the stronger, and seventy of the smaller, growing in each box are quite sufficient. If inserted thicker, they become drawn, and do not stand the winter so well, nor make such fine plants. As soon as the cuttings are put in, the boxes should be removed

at once to the most warm and airy place at command—such as the bottom of a south wall, or any position where they can have the full blaze of the sun: a cool, shaded place is the worst possible for them. The boxes should be placed on bricks, rails of wood, or anything that will raise them off the ground, so that worms do not get access, and to keep the boxes from rotting. They should have as much water given to them through a fine rose as will wet the whole of the soil, and settle it well about the cuttings, and afterwards be kept in a medium state of moisture. If they can be placed in cold pits or frames, so that, in the event of heavy rains, they can be covered with glass, all the better; but glass is not necessary for any other purpose in striking them.

In about three weeks they will be well rooted, and commencing to grow. All the blooms, and the very point of each cutting, should be picked off for the present, and no more water must be given than is sufficient to keep the soil in a moderately moist condition. The great object for successful wintering is to get hardy stocky growth; and if kept liberally supplied with water, or shaded, this is not attainable. When they begin to grow, any of the cuttings that overtop their fellows should have their points pinched out again; and when the leaves become crowded, some of them should be removed, to allow a circulation of air about the young plants.

They may stand outdoors till danger from frost or drenching rains be apprehended, which time depends considerably on the climate of the locality. A good place to winter them is a dry pit, with sufficient amount of fire-heat to keep them safe from frost, and expel damp when necessary. They will winter perfectly well in any

cool, airy, light house, where they can be kept dry, and have a free circulation of air. If they are thick of foliage at housing - time, it should be thinned. It is much better to remove it while in a healthy state, than first to allow it to become unhealthy and decaying, which is generally the case if they are housed without a little thinning. After being housed, they should be carefully preserved from damp overhead; and after the end of October they should not have more water than is sufficient to keep them from drooping; and during damp weather in winter, they sometimes do not require water for weeks at a time. All through winter decaying leaves should be removed as they appear, and occasional fires be made to dry up damp. In this way I usually winter twelve thousand of these Zonale Pelargoniums with scarcely any loss of plants; and in boxes, such as I have described, they occupy little space, and are easily moved when this is required.

In large establishments, where there is plenty of glass, it is a good plan to put the cuttings at once into pits where there are hot-water pipes, to preserve from frost. In this way neither boxes nor pots need be used, the body of the pit being prepared with 5 or 6 inches of light soil, and the cuttings dibbled in according to their sorts; they may remain undisturbed till spring. In this way less trouble and labour are needed than by any other: few places, however, can so accommodate them, and the next best way is that which I have described, and which is more generally applicable both to small and large quantities.

Some gardeners strike them in the open ground in light sandy soil, and as soon as they are rooted, lift them and pot them, either singly in small pots, or a few together in larger ones. This is a very good method,

but it has the disadvantage of requiring more labour, in the first instance, and more room and attention in watering through the winter, than the box method, which is equally as suitable for the amateur, who only requires to strike and winter a few scores in a shelf in his greenhouse; for the boxes can be of any dimensions to suit the position in which they are to be wintered.

Late Autumn Propagation.—When circumstances occur that prevent the propagation of the required number of Pelargoniums at so early a period as I have recommended as the best time, and when the propagation cannot be completed till later in autumn, different treatment is required to be successful. When later than the middle of September, it is best, in most localities, to put them under glass as soon as they are put in the cutting-boxes. A light, airy, dry house or pit, avoiding a cold, damp bottom, is the best for them at that date. When propagation is delayed till October, they do not root with certainty or success without artificial heat. At this season the cuttings should be selected even larger than I have recommended for early propagation; and 8-inch pots are preferable to boxes for striking in, inasmuch as their depth gives more room for thorough drainage, which is indispensable. Moreover, the air and light play more freely about the cuttings in small round detachments than in larger squares in boxes. This is of importance, because damp is the greatest evil to contend with in late striking. No more water should be given than is just sufficient to keep them from shrivelling; and a close, damp, cold atmosphere must be prevented by fire-heat and air-giving during dull weather, with a temperature of about 60° at night. Cuttings put in up till the end of October do very well. It is necessary to

winter these in a temperature a little warmer than is sufficient for early-struck stock, for striking by fire-heat at a duller season renders late ones more tender, and liable to suffer in a cold, damp atmosphere; and, besides this, they require to be kept somewhat more moist at the root than plants with firmer tissues, and on that account more warmth is necessary to guard against damping-off.

Spring Treatment.—The middle of February is early enough to begin potting off Zonale Pelargoniums; and the spring treatment required to make fine plants by the middle of May, of such a stock of young plants as is produced by the practice I have described, is very simple, and different from that which is rendered necessary by selecting small cuttings at a later season, and afterwards treating them tenderly. Unless in the case of scarce sorts that I wish to increase by spring propagation, they are never put into heat after being potted off. Not that a little fire-heat, for a fortnight or so after they are potted, would be anything else than favourable to their wellbeing, but that all available space in heat is reserved for the variegated and more tender sorts; and those of which I am now treating grow into fine sturdy plants without it.

About the second week of February preparation for potting should be made by having the necessary number of 3-inch pots clean and in readiness. For such strong healthy cuttings, drainage of any description is not necessary in the case of this size of pots. The soil should consist of two parts loam, one part of well-rotted dung—dry, and sifted through a half-inch sieve—or leaf-mould, and about an eighth part of the whole of sand. The young plants should be removed from the

boxes with as little breakage to their roots as possible. To this end the soil should be rather dry, so that, after the box gets a sudden shake or two, the plants can be pulled out of it with their roots almost entire. In potting, the soil should be pressed firmly into the pots.

In disposing of them after they are potted, my own practice is to remove them to a large cool peach-house, where there is command of heat just sufficient to keep the frost out. It is a very light house, and the floor of it holds 9000 plants in 3-inch pots. Should the weather be dull and damp, watering should be delayed till a few days after they are potted-off. When watered they should get sufficient, through a rather fine rose, to moisten the whole soil. The night temperature, when fire-heat is required in case of frost, ranges about 40°. For the first fortnight or three weeks, the front sashes are kept shut, but abundance of air is admitted at the top. In such a house they get as much light as is possible under glass, and after they begin to root, as much air as can be admitted on all favourable occasions as the opening of the whole top and front sashes allows. By the middle of May the plants under this hardy treatment are strong and stocky, bristling with bloom and bloom-buds, and receive no serious check when removed to the open air.

This treatment cannot, of course, be pursued where such house-room does not exist: if, instead, there be light dry pits, from which frost can be excluded by hot-water pipes, they answer the same end. In the case of those who have only pits or frames to which artificial heat cannot be applied, and where, unfortunately, as is too often the case, the only accommodation for flower-garden plants consists of vineries and peach-

houses, the best course to pursue is to pot-off in March, when the advantage can be had of a short time of heat in such houses, after which the plants can be removed to cold pits and frames, where late spring frosts can be excluded by coverings, and where they can be properly hardened off.

Such is the treatment by which fine plants are raised, when early autumn propagation is practised as I have described. But there are many so circumstanced that, though they can find room to winter them in cutting pots or boxes, they cannot, at so important a season as spring, command convenience to enable them to pot each plant singly. Such cases demand special rules. What I would recommend as a good course under such circumstances is, that the cuttings be put in somewhat thinner than I have recommended for those to be potted-off, and early in February to pinch the points out of each cutting, to cause it to make lateral growth, and to let them remain in their boxes till planting-out time. For treating them in this way, I prefer 8-inch pots to boxes, as a greater proportion of the plants are at the outside of the small round detachments, and they are therefore not so liable to suffer from crowding. Moreover, the extra depth of soil afforded by the pots, as compared with boxes, affords the plants more nourishment, and at planting time they can be shaken out with better roots. Managed thus, they do not flower so early; and in damp cold soils they have a greater tendency to grow to leaf at the expense of flower than when potted off. But in dry soils I have planted them out from the cutting-pots, and, though later in blooming, they ultimately do exceedingly well.

Spring Propagation.—Deficiency of stock, arising from

whatever cause, has frequently to be remedied by spring propagation. This can be carried out with success only where there is a command of artificial heat all through the spring. The method I have adopted is to place the stock of autumn-struck and of older plants in a temperature of 60° to 65° early in February. As soon as they make a fresh growth of a few inches, and have pretty well filled their pots with roots, they are topped for cuttings. A few leaves should always be left on the parent plants; and all the cuttings should not be taken from old-lifted plants at once, because, if cut too close, they receive a sudden check. The best way is to go over them several times, taking the strongest cuttings.

The best time to strike these is in March and early in April, after the plants have been excited into fresh growth. Cuttings always strike more freely after than before the growth, and it is also much better for the parent plants. Well-drained pots, pans, or boxes, filled with equal parts loam, leaf-mould, and sand, sifted through a quarter-inch sieve, form an excellent medium for striking in. After the cuttings are put in, a watering of lukewarm water should be given, to settle the soil about the cuttings. They should be placed in a temperature of 65°, near the glass, and where they can have full sun, from which it is not desirable to shade them, unless it be a short time in the middle of the day—more to prevent drying the soil than anything else. Keep the soil moderately moist, and in three weeks they will be ready to pot off. In potting them, care is required in turning them out of the pots, so as not to injure the young roots. I very frequently pot off as soon as the roots are just formed; and when room can be commanded, put the cuttings at once into the pots in which they are to

remain, to obviate the check from breakage of roots at potting-off time. After being potted, return them to the same heat in which they have been rooted, till the roots reach the bottom and sides of the pots, when they can be removed to colder quarters to make room for others. Of course, if increase of stock be urgent, they can be kept in heat till they in their turn yield their tops for cuttings. By thus keeping old and young plants in heat for three months, it is astonishing how stock can be increased.

The principal evils to be avoided in spring-striking, are a damp stagnant atmosphere, and keeping the cuttings too damp on the one hand, and on the other allowing them at any time to become so dry as to cause them to droop and shrivel. Bottom heat is not necessary, although, when the other necessary conditions can be applied along with it, there is no objection to it.

Soil most suitable for Beds of Zonale Pelargoniums.—A light sandy loam, moderately enriched with either well-rotted dung or leaf-mould, and resting upon a dry gravelly bottom, is the best for producing a moderately strong growth and profusion of bloom. The stronger varieties, especially of this section, grow too much to leaf when planted in rich, damp, heavy soils, more particularly in wet localities. In such localities, the beds, if possible, should be made up of soil more light and porous than is desirable for dry situations. The depth of soil should be less, and the beds more elevated, and thoroughly drained, with the view of promoting a growth more productive of bloom. In some parts of the country, such as the wetter parts of the west and south-west of Scotland and north of England, it is a good plan to plunge the plants in the beds, in pots varying from 4-inch to 6-inch sizes, which has a greater tendency than any-

thing to throw the plants into bloom. When this practice is adopted, as it is in many instances, it is desirable to save and use as large a proportion of the plants for several years in succession as possible. Old plants flower more freely, and by being kept in their pots the blooming disposition is increased. It is generally found that, when kept thus a few years, and it is decided to keep them no longer, they acquire such a short-jointed habit that they may be turned out of their pots the last season with advantage. Some sorts are more suitable for certain soils and localities than others, and these peculiarities can only be thoroughly decided by experience in various localities. When practising in a damp locality, I have seen the flowering qualities of some of the strong-growing ones wonderfully improved by making the beds shallow, and mixing burnt clay, sand, and cinders with the heavy soil, to make it dry and porous. It is a good plan to go over Pelargonium beds, which have a tendency to strong growth, about the beginning of August, and pinch just the terminal bud out of each shoot. This checks the wood or stem growth, and the trusses grow more strongly, and are thrown up more prominently than when stopping is not practised.

Select List of Zonale and Plain-leaved Pelargoniums most suitable for Beds and Lines.—Those marked * are best where a small collection only is grown, and those marked † are nosegay varieties.

Admiration, crimson scarlet.

* Alexander, deep pink, large truss.

† * Amy Hogg, purplish rose.

Beauty, vivid scarlet, white eye.

† Black Dwarf, crimson scarlet, very dwarf.

Chilwell Beauty, rose ; fine.

* Christine, rosy pink.

- † Cybister, crimson scarlet.
- † Carmine Nosegay, carmine ; dwarf habit.
- † * Duchess of Sutherland, purplish rose.
Eleanor, vermillion.
Eva, pink.
- * Excellent, light scarlet.
- * Frogmore Scarlet, deep scarlet.
- * Glendinning's Scarlet, scarlet.
- † Firebrand, crimson scarlet ; very dwarf.
- * Glorious, scarlet.
Helen Lindsay, rosy pink.
- † Lady Constance Grosvenor, fiery red.
- † * Le Grand, crimson scarlet.
Little David, scarlet ; dwarf.
Lord John Russell, scarlet ; dwarf.
- † Lord Palmerston, lake, tinted with crimson.
Louisa, bright rose, shaded with salmon.
- † Magenta Queen, magenta or rosy crimson.
Minnie, crimson scarlet.
- * Madame Vaucher, white.
Mrs. Whitty, deep rose.
Orange Globe, orange scarlet.
- * Perfection (Sutton's Scarlet), deep scarlet.
- † Pink Nosegay, pink.
- * Pride of Osberton, scarlet.
- † * Rival Nosegay, reddish crimson.
Rose Queen, bright pure rose.
Rose Rendatler, rose pink.
Scarlet Gem, orange scarlet.
- † * Stella, crimson scarlet.
- † * Surrey Rival, like Stella, but dwarfer.
- * Trentham Rose, rosy scarlet.
- * Tom Thumb, scarlet.
- * Vesuvius, scarlet, dwarf and fine.
- * Vivid, deep scarlet.
- * Waltham Seedling, dark crimson.

Ivy-leaved Pelargoniums suitable for Edgings and Vases :—

Elegans foliis variegatis, silver-margined leaves.
Peltatum elegans, mauve-coloured flowers.

Old White.

Pink Flowers.

„ „ foliis variegatis.

Blushing Beauty, like Old White, with bluish flower.

Bridal Wreath, large white flowers.

Scarlet Ivy Leaf.

Sweet-scented Leaved Pelargoniums :—

Apple-scented.

Peppermint-scented.

Citron-scented.

Pheasant's Foot, very elegant.

Lady Plymouth.

Prince of Orange.

Lady Scarborough.

Fair Helen.

Lemon-scented.

Rose-scented.

Odoratissimum.

„ „ silver variegated leaves.

A vast number more might be included, but these are what I have proved to be the best for beds and lines, because they are the freest bloomers, as far as my experience goes. I have proved hundreds of varieties, many of which are very fine, judged by the individual trusses of flower, and most of them are very fine in pots; but it requires a combination of habit and freedom of bloom to qualify a Pelargonium for the parterre. All the nosegay varieties named are very effective, and bloom best in poor soil.

VARIEGATED PELARGONIUMS.—*Autumn Propagation and Winter Treatment*.—Under this head I include the golden and tricolor leaved varieties. Variegated Pelargoniums are among the most chaste and pleasing parterre plants that we possess. Being of a compact and even habit, they are strikingly effective either in beds, or when used for edgings and long lines. They have also the merit of standing wet seasons remarkably well. They are considered more tender and difficult to propagate and winter than the Zonale varieties; and, generally speaking, they are so, and will not put up with the same hardships.

I generally propagate in autumn from eight to ten thousand, and, by pursuing the treatment I am about to describe, with uniform success, in both rooting and wintering them. With regard to the time of taking cuttings, their size, and preparation, the same rules are followed as in the case of Zonales—namely, they are taken early in August, selected of large size; and great care is taken that, in collecting, making, and putting them in, they are not bruised.

After trying various ways of striking and wintering them, I give the preference to 8-inch pots over either large pans or boxes. The pots are thoroughly cleansed outside and inside. They are drained with 2 inches of rather finely-broken crocks, over which is placed a layer of rough dry mushroom dung about an inch deep. Then follows about 2 inches of rich soil, consisting of one part loam, one part finely sifted rotten dung, and about a fifth of the whole of sand; and the pots are filled up firmly with loam, leaf-mould, and sand, in equal proportions. The whole is mixed thoroughly by being passed through a half-inch sieve before the pots are filled up. The number of cuttings put into each pot varies from fifteen to eighteen, according to the habit of the sorts; and great care is exercised in dibbling them in with a large dibble, so as not to bruise them. As soon as the pots are filled with cuttings they are placed in cold frames or pits, on a dry bottom, and watered sufficiently to wet the whole soil. The lights are then put on, and raised entirely off the frame at back and front, so as to cause a free circulation of air about the cuttings. The only object in putting glass over them at all is to prevent them from getting rain when they are sufficiently moist without it, and to keep them from the influence of night

dews. Except for this, they would be quite as well without the glass. The warmer and more exposed to the sun the better, provided they are exposed to a circulation of air. Shade is never applied. In watering them, the object is to keep them moderately and uniformly moist. Excess causes them to damp off, and too little to shrivel. Careless watering—erring in either extreme—is their greatest enemy. In a month they are generally rooted; and though they will then bear a greater supply of water, it should only be slightly increased, as stiff hardy cuttings are more the object desired than larger and watery ones.

From the day the cuttings are put in, cleanliness must be attended to—that is, every leaf that turns yellow should be removed, and not allowed to drop on to the surface of the soil to breed decay. The frames should not be shut up by night or day, for stagnant air and shade increase any tendency there may be to damping-off. In cold damp localities I would advise that, instead of placing them in low cold frames to strike, they be put into some dry airy house or elevated pit, where they can have a dry warm bottom, and full exposure to light and air.

I have always found that variegated Pelargoniums strike better, and can be wintered with less loss, in 8-inch pots, than when put into large pans or boxes. During the time they are rootless the soil is easier kept in a proper state of moisture than in smaller pots, and is less subject to excess of moisture than in large pans or boxes; and when placed in their winter quarters in small round clusters, they get a free play of air about them, which diminishes the tendency to damping.

Should the early part of October be wet or dull, and damp appear to affect them, they are removed to the front and back shelves of early vineries and peach-houses, where they get all the light and air to which these houses are then exposed. Till the middle of November sufficient water is given them to prevent their drooping, and after that date I have known them go for two months without a drop of water. Every decaying leaf should be removed as it appears; and, managed in this way, the percentage of loss is trifling compared to what takes place when they are struck in close frames, and wintered on a damp cold bottom far from the glass.

When such varieties as Mrs. Pollock, Golden Chain, Queen of Queens, and other tender sorts, show any signs of distress in the short damp days of midwinter, they should, if possible, be removed to a warmer temperature than that of a cool vinery or greenhouse. Still, even these varieties, when large cuttings are struck early, give very little trouble, and winter perfectly well in a cool dry house, when small cuttings, struck later in the season, would succumb.

Spring Treatment of Autumn-struck Cuttings.—As vineries and peach-houses are started, and any other accommodation in warm temperatures can be made available in the spring months, the cuttings are carefully shaken out of their store-pots, potted up singly, and placed in heat generally ranging from 55° to 70°, according to circumstances; 60° is an excellent temperature for starting them. The smallest cuttings and slowest-growing varieties are potted first, and *vice versa*. In the matter of pots and soil the same treatment as is applicable to Zonale Pelargoniums answers for varie-

gated varieties. If any difference be made, it should be to have the soil fully richer and the pots a size smaller for the variegated sorts, especially the slower-growing varieties. They should not be allowed to remain in vineries and peach-houses till the foliage of the vines closes over them, otherwise they soon suffer from the absence of light. When removed from such houses, it is most desirable that the quarters for hardening them off should be dry and light, with glass over them. In many cases this is most difficult to provide, from the limited amount of glass, and the many things demanding careful treatment in spring.

In the case of amateurs and others who may not have room in heat into which to put them when potted singly, many of the strongest varieties do tolerably well by being kept in the cutting-pots till they are planted out. When such a course has to be pursued, they should not be so thickly inserted in the cutting-pots in autumn. Bijou, Flower of Spring, and others of a similar free habit, succeed in this way, provided the beds are free and rich. On the other hand, where the amount of glass is sufficient, consisting of such structures as those from which frost is being excluded, but without heat sufficient for potting-off tender varieties early in spring, I would advise that the potting-off be accomplished in autumn, so that the plants may be well established before the dead of winter, or else deferred till the end of March, when there is more natural warmth. They are, however, greatly improved by a few weeks in heat after they are potted-off in spring.

Spring Propagation.—Variegated Pelargoniums can be as easily increased in spring as the other sorts. The

plants from which the cuttings are to be taken, whether young autumn-struck or older-lifted plants, should be excited into fresh growth in heat for a few weeks before the cuttings are taken from them. If put into heat early in February, they are generally in a nice condition for propagating about the second week of March, which is an excellent time for striking. Cuttings taken from plants while they are in a dormant state earlier in the season, I have not found to do so well; besides, the old plants break more freely when they are cut back after their roots have become active.

For striking I generally use 8-inch pots prepared exactly as directed for spring propagation in the case of Zonales, except that the pots are drained a little more, and the top layer of soil into which the cuttings are put is made a little more sandy. In taking off the cuttings, all crushing or bruising of either stems or leaves should be carefully avoided. Bottom heat is not necessary, although desirable. They root very freely in any house or pit where the temperature ranges from 65° to 70°, where there is not much steaming or moisture, and where they can be placed within a few feet of the glass, and slightly shaded during a few hours in the brightest part of sunny days. The two extremes in watering must now be even more strenuously avoided than in autumn - striking; for variegated Pelargoniums, though impatient of much moisture before they are rooted, are equally impatient of the other extreme. Water should be applied from the spout of a small pot without wetting the leaves. The whole of the golden and silver varieties root very freely, managed in this way; and by being potted off before the roots get more than an inch long and

liable to breakage, they make fine plants very quickly if kept in heat for a month or six weeks. Spring-struck plants generally grow very freely when planted out, and frequently produce finer foliage—for which the variegated varieties are especially prized—than autumn-struck plants. It is, however, always desirable, in these high-pressure times, to accomplish as much of the propagation of Pelargoniums in autumn as possible. Spring propagation of the variegated sorts, in particular, need only be attempted where there is the command of artificial heat.

Soil most suitable for Variegated Pelargoniums.—This section, being grown principally for the beauty of their foliage, can scarcely be grown too vigorously. They make the finest leaves in a rich sandy loam. They are, however, exceedingly impatient of stagnant water, and will not thrive in ill-drained beds. Indeed, some of the more tender sorts do not thrive well in districts which are wet, and where the soil is cold. What they thrive best in is a rich, light, well-drained soil, with a moderate amount of wet. Where the soil is sandy, dry, and poor, they never thrive well, nor increase much in size. In such situations they require rich manure and plenty of water. This is the reason why they thrive so luxuriantly in a moist warm stove, when they get plenty of water and light.

Select List of Variegated, Gold, Bronze, and Tricolor Zonale Pelargoniums most suitable for Beds and Lines.—Nearly all those marked thus * are well-proved varieties, and suitable for small collections; those marked G. are golden-leaved, T. tricolors, and B. bronze zones.

* Alma, scarlet flower; leaves deeply margined with white.

Alma marginata, rosy scarlet; variegation of very pure white.

- B. Annie Williams, gold, with dark bronze zone.
 - * Beaton's Variegated Nosegay, silver leaves ; pink flowers.
- B.* Beauty of Oulton, clear yellow ground, bronzy crimson zone.
 - * Bijou, bright scarlet ; leaves margined with pure white.
 - * Brilliant, deep scarlet ; very free bloomer ; slightly margined with white.
 - * Brilliantissima, silver variegated.
- R. Bronze Shield, dark bronze zone.
- G.* Crystal Palace Gem, an improvement on Cloth-of-Gold.
- G.* Cloth-of-Gold, scarlet ; rich golden yellow leaf.
 - * Countess of Warwick, scarlet ; white variegated leaf belted with bronze.
 - Dandy, white variegation ; very dwarf, and good for small beds.
 - * Flower of Spring, flowers cerise ; leaves deeply margined with white.
 - Fontainebleau, pink flowers ; silver-margined leaves.
- B. Gaiety, yellow, with bronze zone.
- G.* Golden Chain, rich gold leaf ; an old and well-known variety.
- G.* Golden Fleece, rich gold leaf ; spreading dwarf habit.
- G. Golden Pheasant, fine gold-leaved bloom.
- G. Golden Tom Thumb, similar to Golden Chain, but stronger.
 - Italia Unita, broad margin of white with a carmine zone ; a beautiful variety, but of tender constitution.
- T.* Lady Cullum, resembles Mrs. Pollock.
 - Lady Plymouth, variegated white and green ; sweet scented, and on some soils admirably adapted for edgings.
- T. Lucy Grieve, golden margin, crimson zone, bronze centre ; very beautiful, but not so free as Mrs. Pollock.
- B.* Lunna, yellow ground, broad bronze zone.
 - * Mangles, an old and most useful variegated white-and-green sort.
- T. Meteor, fine tricolor.
- T. Miss Watson, fine.
 - Mountain of Light, silvery-margined ; compact grower.
- T. Mrs. Benyon, rich golden yellow leaf, with dark zone shaded red.
- T.* Mrs. Pollock, margined with yellow, bronze zone, belted with crimson ; splendid free-going variety.
- T. Prince of Wales.
 - * Queen of Queens, large scarlet flowers ; silvery-edged leaf ; extra fine.
 - * Shottesham Pet, creamy variegated.
 - Silver Chain, pink blooms ; silvery-margined leaf.
 - * Stella variegata, sport from Crimson Stella ; crimson flowers ; silvery-margined leaves.

- T. Sunset, similar to Mrs. Pollock, but not so free.
The Queen, silver-variegated, fine.
- B. Vandyke, dark bronze zone.
Variegated Tom Thumb, scarlet flowers; leaves margined with white.

Instructions for those who have neither Pit nor Greenhouse, and who wish to winter Pelargoniums in a Spare Room.—Under all circumstances, and more especially when Pelargoniums have to be wintered in a spare room, the cuttings should be put in before the middle of August. Amateurs are very often in error in selecting far too small cuttings—the mere points of the shoots. As the successful preservation, under not very favourable circumstances, depends so much on the description of cutting selected, I want to impress those whom I am now addressing with the desirability of selecting large cuttings. They should be from 8 to 10 inches long, according to the respective sorts, instead of 3 to 4 inches, as is so frequently the case. Strong firm cuttings not only root more speedily, and with scarcely a failure, but they stand the trials of winter better and with far less attention, and in spring make finer plants with less nursing than small ones.

To preserve them in rooms with the greatest possible success, I recommend 8-inch pots instead of wooden boxes. The pots should be well drained and filled up with a compost consisting of loam, leaf-mould, and sand, in equal proportions. This is the best soil; but when it cannot be had, common light garden soil and road-drift in equal proportions, with the addition of a little sand, answers very well, and is easily attained by most amateurs. The pots should be filled up firmly with this compost after it has been passed through a half-inch sieve.

The cuttings should not be put in too thickly. Fifteen in an 8-inch pot are plenty, and in the case of the strongest sorts even twelve are enough. After the cuttings are made, and dibbled in as formerly directed, the best place to set them to root is the hottest place outdoors, where they can have as much sunshine as possible. If struck and nursed in the shade, they never thrive nor winter so well as do those hardy stubby plants that are struck in the full sun and air. They should be left outdoors as long as there is no danger of injury from frost or heavy rains; and in this case, if they can be sheltered from these, they are best left out till near the end of October. This will be better for them than placing them in a room, unless the trouble be taken to set them outdoors every fine day. By this treatment plants are produced that rustle as the hand is drawn over the leaves, and are therefore much more able to go through the hardships of winter than are cuttings struck later, or in some shady corner.

The best place to winter them in is a room with a bow window having a south aspect, inasmuch as they get much more light than in an ordinary window; and if the window-shutters are white, all the better, as the light is thereby reflected on to the plants. After housing them for winter, they should have no more water than is sufficient to keep them from drooping, and that will not be a great deal unless in a room where a strong fire is kept. It is often, I might say, painful to see *Pelargoniums* which have been struck late and placed in a window, and supplied with a liberal supply of water, which they are unable to absorb because of the poverty of their roots. Of course, a large percentage of deaths is the result. Over-watering

is one of the greatest evils when they are stored in a room where frost is merely excluded. By being kept comparatively dry, they multiply their active rootlets much more, and acquire an amount of irritability which insures rapid progress and robust plants in spring. It is not possible to give definite instructions as to the quantity of water that should be applied. In a room with a constant fire, more will be called for than where there is no regular fire. Plants in rooms are generally placed in saucers to prevent the water from being spilt, and in the dead of winter it is a good plan to pour a little water into the saucers to rise by capillary attraction to the soil and roots. This prevents damp about the stems and leaves near the surface of the soil. In a cool room, where there is only a fire made in very damp or cold weather to dry the room and keep the plants safe from frost, very little water indeed is required. They should just be kept from drooping, but nothing more. In severe frost they can be lifted into the warmest corner of the room, and covered over with a cloth; but a little fire, with some extra protection at the window, is preferable to covering up. Pelargoniums in the hardy condition that I have described, will not suffer with the thermometer at the freezing-point, if all about them is dry. Dust must be kept from collecting in the leaves and filling up the pores. This is best prevented by sponging the leaves with a moist sponge. Managed in this way, they give comparatively little trouble in spring, when, with the increase of light, heat, and water, they make fine strong plants, which, after being hardened off by being set outdoors every fine day after the middle of April, may be shaken out of their pots and planted out with

success. Of course, when the weather is fine, they should be supplied with air by opening the windows, when it is not desirable or convenient to set them outdoors. Amateurs will find other points of management in former chapters, which it is not necessary to repeat here.

Lifting and Wintering Old Pelargonium Plants.—In cold localities, where the soil and subsoil are damp, young plants have a tendency to grow too much to leaf, and yield but a scanty amount of bloom. Under such circumstances, it is very desirable to lift a good many old plants out of the beds in autumn, and preserve them for another year's service. Old plants, in damp localities particularly, always bloom much more freely than either autumn or spring-struck plants. To winter these successfully, they should be lifted before they get injured by frost. They should be raised out of the bed with a spade, preserving as many of their roots as possible, and taking care not to bruise their stems. All the large leaves with long footstalks that are likely to wither and decay about the plants should be removed at once, and the long straggling roots cut back a little. The more entire the plants are preserved, the more certain is their well-doing; and I recommend the removal of the large leaves only to avoid their damping or decaying about the stems. They may be potted singly, or two or three together, in 5 and 6 inch pots. It is not desirable, if potted singly, to use larger pots than will just hold the roots and steady the plants. To pot singly requires more room and labour. I am very partial to the plan of potting six to eight plants in 8-inch pots, and shaking them out, and potting singly in spring as room can be afforded them. When

a number are thus potted closely together in one pot, all their leaves should be removed except those which are about the size of a halfpenny at the points of the shoots. For the more hardy and robust sorts, boxes may be used instead of pots; but for the tender variegated sorts, 8-inch pots are decidedly preferable, when there is not convenience to pot each plant singly in smaller pots.

Whether pots or boxes be used, the treatment required is much the same. The soil used should be light and moderately rich. One part loam, one part leaf-mould, and one part sand, makes a fine compost, sifted through a half-inch sieve, to make it sufficiently fine to be easily worked or packed closely about the roots. In potting, press the soil firmly down, and make it compact and close, so that air may be as much as possible excluded from the roots. If the soil is, as it ought to be, moderately moist, water will not be necessary for some time at so dull a season, especially as the greatest enemy to the welldoing of the plants is damp. To render it unnecessary to apply water, and at the same time keep the roots in a medium sufficiently moist, it is an excellent plan to cover the surface of the soil in the pots with about half an inch of very dry fine soil. This prevents evaporation, and keeps the soil moist without watering for a long time.

This treatment and precaution applies especially to the case of those who are not able to give the newly-lifted plants a start in heat at a temperature of 60° till they begin to root afresh and make new leaves. Where they can be placed in heat for a month or six weeks after being lifted, they should be watered at once. When this can be done, I do not recommend that the

plants should be so much denuded of their leaves when potted ; on the contrary, the greater portion of the leaves should be left. When, after they have had a start in heat, they are removed to a cooler place, they should just have sufficient water for the winter to prevent their showing signs of distress. Pelargoniums managed thus can be cut down in spring, and the cuttings struck ; and the old plants having a hold of the soil, break afresh, and make splendid dwarf bushy plants that bloom with great profusion.

Lifted plants, such as are now being treated of, when managed as has been directed, can be wintered with a tolerable amount of success in any dry cool place where frost can be excluded, such as a spare room, loft, out-house, or even cellar, where they will not be subject to damp, and where the temperature ranges from 35° to 40°. When to be placed in such situations, the whole of the leaves are best removed when lifted, and they should not be watered till spring. Indeed, the soil in which they are potted or boxed should be rather drier than it is generally used for potting. Success depends on dryness, and an equal temperature, to prevent their suffering, on the one hand, from cold, and, on the other, from such a degree of heat as would excite them into growth in the absence of other favourable conditions. Wherever they are wintered, they should be frequently examined, every morsel of decay cut away, and the wounds dusted with lime in a dry and caustic state. When stowed away in dark places, where there is a difficulty in keeping the atmosphere about them sufficiently dry, they should be lifted out occasionally for a few hours in the middle of fine days. It must, however, be remembered, that wintering them in such places

is, at the best, a makeshift. Still it is well that such useful plants as Pelargoniums can be preserved in such places, and those who can command no better need not be without them.

Amateurs who are destitute of any better resources than those referred to, would do well, especially in damp soils, not to plant their Pelargoniums in the usual way, but to plunge them, pots and all, into the beds. In this way they grow less robustly, flower more freely, and are easily lifted and housed in autumn without being severely checked. Being established in their pots, and their growth stubby and firm, they are in the best possible condition for rough treatment in winter.

VERBENAS.—*Autumn Propagation and Winter Treatment.*—Looking at Verbena cuttings before they are taken from the parent plants, we see them in all the health and vigour attainable in a rich soil and under the influence of sun and air. The end to be attained is not simply how to get them rooted and established as independent plants; this could be effected in many ways, and at different times. The question is, how to effect it in the easiest, quickest, and most convenient way, and at the same time entail the least possible debility on the young plants in the process of striking; and when struck, how best to treat and dispose of them, so that they will go through the winter in the greatest health and robustness possible.

If we could but fully comprehend the means by which the most important results are accomplished in the great laboratory of nature, it would be found that these means are in themselves simple, although, like all else in the abstract, marvellous. So I think it is

to be found in gardening; for the simpler the means in many cases, the more satisfactory the results. After having tried various ways of preparing a stock of Verbenas in autumn, at once healthy and numerous enough to enable short work to be made of spring propagation, the following course has been found the most satisfactory and simple of any that has been tried.

Early in August, about 9 or 10 inches of half-rotted leaves are beaten firmly into the bottom of a cold frame; over the leaves is put about 3 inches of light soil, composed of one part loam, one part well-rotted leaf-mould, and rather more than one part of sand; this is well mixed, passed through a half-inch sieve, and firmly beat down with the back of a spade: in this state the frame is in readiness for the propagator. There is not much ceremony about the selection of Verbena cuttings, beyond their being short, stubby, fresh shoots, that have not yielded blooms, and become wiry and long-jointed. They are cut through at the third joint from the top, the two bottom leaves removed, and dibbled into the frame about an inch apart as they are made, and all watered with as little delay as possible, so that they are not allowed to droop and get checked by being dried up. When all are in they receive an extra watering, sufficient to moisten the whole of the 3 inches of soil, so that after-watering is rarely necessary till they have formed roots. The frame is shut down, and during strong sunshine in the middle of the day they are shaded for a few hours with double mats; at other times, and during not very bright days, one mat is sufficient. In fact, everything is now done to keep them cool. If the evenings are calm, the lights

are either tilted up or drawn off for a few hours ; and when put on for the night, air is left on. In the morning, if the day is likely to be hot, they are gently dewed overhead with a very fine rose or syringe. Under such treatment they root without making much top-growth—very little, indeed, as compared with similar cuttings struck later in the season in warmer quarters.

When they have made roots about an inch long, they are pricked off into round pans 14 inches in diameter, and 5 to 7 inches deep. For the more healthy and vigorous-growing kinds, boxes answer very well ; but I prefer earthenware to wood for delicate sorts, such as Purple King. The pans are prepared by placing a thin layer of finely-broken crocks in the bottom, then a layer of old mushroom dung, and they are filled up with a very substantial compost, consisting of equal parts of loam and mushroom dung and a slight addition of sand. About thirty plants are dibbled into each pan, with as little injury to their short young roots as possible. They are then returned to cold frames, shaded slightly for a few days, and as soon as possible, but gradually, fully exposed to all weathers except heavy rains. They grow rapidly, and are repeatedly stopped and kept free from bloom-buds as they grow. They are placed in their winter-quarters about the middle of October, and by that time they are strong healthy plants, leaving not a vestige of the soil in the pans to be seen. From their vigorous and hardy condition they can be wintered in an airy, cool, dry house or pit, from which frost can be excluded. We make up from eighty to a hundred such pans, and winter them on the floor of a peach-house, where they get plenty of light and air ; and even with such varieties as Purple King, which is largely grown,

and generally considered very difficult to winter, there is no trouble with mildew. From the time the cuttings are taken, the object is to get them rooted with as little attenuation as possible from heat and a stagnant atmosphere, and afterwards to get a strong hardy growth by using rich soil, and exposing them to sun and air. Early propagation is necessary to this; and to get fine Verbenas, they should either be put in with the closing days of July or the beginning of August.

In the matter of watering, they should never be allowed to become dry, nor yet be kept otherwise than just moist, through the winter months. There is, however, more injury likely to arise from drought to such plants as Verbenas than from a little over-dose of water. The pans being thoroughly filled with strong healthy roots, they are less likely to suffer from water than weaklings that have been struck in September in heat.

By following out this early and cool propagation, the amateur who can only command a hand-glass, or a few flower-pots and some panes of glass, can root and get up a nice healthy stock of Verbenas, that he could winter in the spare-room window, or in a moderately light place, where he can keep them from frost. The more light, however, in winter the better; they could be placed outside, to get fresh air and light in fine weather, in winter and spring.

Spring Propagation.—It has long been a generally recognised fact that spring-struck Verbenas—like a good many other plants, but these in particular—are better than autumn-struck. They grow more healthily and freely, and consequently keep up a longer and finer succession of bloom. Belief in this entails upon the flower-gardener a very considerable amount of propaga-

tion at a very busy time. For a good many years I have made it a study how to compress spring propagation into as short a time as possible, and have so far accomplished this object as greatly to reduce the time occupied by such work, and at the same time improve the quality of the plants. In the case of Verbenas, which form a large proportion of spring-struck plants, it was a common practice to put, say, half a dozen plants into 4-inch pots. About the end of January these were shifted into larger pots, and forced in stove heat for cuttings. By this means they can be wintered in good condition, and be made to yield large numbers of cuttings in spring; but not without more labour, time, and care than when managed in autumn and winter as has already been described, and by which a greater number of plants can be kept over with less care and in finer condition.

By that method from 80 to 100 pans, where such quantities are required, can be wintered in a comparatively small space, requiring less attention in watering, and in spring the plants are found in splendid health, without any further shifting or potting. Reference to a garden diary shows that 16,000 cuttings were put in at one 'clip' in February 1866, after the pans had been a fortnight in a temperature of 65°. It need not be said that in a very short time the necessary number of Verbenas is thus very quickly got up, and the old pans handed over without much exhaustion to cold frames.

Although fine fresh-looking cuttings could be taken from such pans or boxes before being put into heat, it is best to put a growth on them in heat first. They strike more freely after being a fortnight in a moist atmosphere with a temperature of about 65°. If placed near the glass when being thus forced, all the better.

This system of wintering a considerable number in large pans saves much time and labour, and affords a far healthier supply of cuttings. The production of fine healthy cuttings quickly in spring is a very important point in preparing the requisite number of plants; for if cuttings cannot be had in quantities at a time, propagation is necessarily extended over a longer period, and much valuable time is frittered away in nibbling over small numbers at many different times.

To strike cuttings of Verbenas in spring, I am not certain that any appliance for the supply of heat is better than the old hotbed, properly prepared with dung and leaves. There is, however, much less labour attendant on the operation when a more modern propagating house or pit is at command. And where the heat can be regulated by means of hot-water pipes—and all gardeners who have much flower-gardening to do should be supplied with such a house—circumstances will, in most instances, decide how the top and bottom heat necessary for spring propagation is to be supplied; but those who cannot command a smart top and bottom heat need not attempt spring propagation. To do it in cold pits or frames is out of the question. At the same time, any amateur or gardener who can make up a hotbed 6 feet by 8, and about 4 feet deep, and put a hot lining to it when the heat declines, is in a position to propagate many thousands of plants through the course of March and April. Sawdust, cinder ashes, or a little tan, or even light dry earth, when nothing better can be had, to plunge the cutting pots or pans in, and sand to put the cuttings in, are the principal materials wanted. There are few operations within the whole range of gardening calculated to prove a more pleasing

recreation than the propagation and rearing of young plants; and when the gaieties of the garden are the work of one's own hands, this must enhance many degrees the pleasure and satisfaction derivable from such a source.

For the sake of amateurs, I will remark that there are many simple ways of propagation, so far as the source of heat is concerned. Take, for instance, a vinery or forcing-pit, heated by either flue or hot water. Let a box 15 or 16 inches deep be placed on the flue or pipes, fill it half-way up with sandy soil, and follow with an inch or two of finely-sifted sandy and light rich earth in equal proportions, and over all an inch or two of pure sand. Cuttings of Verbenas, and many other plants, inserted in the sand and covered by a few large panes of glass over the mouth of the box, will root freely. A space of 2 or 3 square feet, made use of in this way, may be made to produce as many plants as will fill a good many beds.

Verbenas have a wonderful power of emitting roots when they are in a healthy, growing condition; and in a high temperature, where the atmosphere is moist, they will root without bottom heat, but of course not so freely and surely as with it. A good practice, in the absence of a propagating-pit supplied with bottom heat by hot water, is to propagate in a pit the body of which is filled up with hot leaves, and about a foot of tan on the surface, while the atmosphere is heated by hot-water pipes. It does not matter much, so far as mere striking is concerned, into what sort of vessels the cuttings are put. But looking at the work in the light of time, labour, and attention, as well as economy of space, shallow boxes $2\frac{1}{2}$ feet by $1\frac{1}{2}$ feet, and about 4 inches deep, are the best. The crocking and nibbling connected with small pots

and some other makeshift receptacles are avoided. In the case of these boxes, all that is necessary in preparing them is to strew a little of the rough and fibry part of loam, or any open material, over the bottom ; blind this over with a little finer mould, and then lay on a sufficient depth of sand for the insertion of the cuttings. From 500 to 700 *Verbena* cuttings, according to their size, are put into each of these boxes.

After being well watered, they are placed on the surface of the warm tan. Here they root in a few days, without any further watering or attention beyond being shaded from the sun ; and very little space is required to raise a large stock of plants. Perhaps the most speedy way, where a very strong heat can be commanded, is to fill common garden-flats with pure sand ; water it till it becomes quite soft and full of water. Into this the cuttings are put, and placed on a strong heat. They root very quickly, and with very little trouble ; but there must be a bottom heat of from 90° to 100° to carry out this plan successfully.

Although every joint of most sorts of *Verbenas* may be made into a cutting, a decided preference is given to strong cuttings. They require a shorter time's nursing in heat before being hardened off, and it is much preferable to have to pinch the tops off than to subject morsels of cuttings to weeks of coaxing.

As soon as the cuttings have made roots from half an inch to an inch long, they are immediately pricked off. When allowed to remain longer in a strong heat in sand, they become drawn and weakly, and make long roots, which are broken more or less when pricking off is delayed. For this purpose the same sort of boxes as those recommended for striking are used, and from which the *Scarlet*

and other *Pelargoniums* have at this season just been potted-off. A crock is put over each hole at the bottom of the box ; then about an inch and a half of mushroom-bed dung, sifted through an inch sieve. The boxes are then filled up nearly to the top with loam and leaf-mould, in equal parts, with a little sand. Into each box from 150 to 200 plants are pricked. They are then put into any convenient place where they can have a night temperature of 60°. They are shaded as little as possible, no more than is necessary, in conjunction with a moist atmosphere, and an occasional sprinkling overhead with a fine rose, to keep them from flagging. A short time in such quarters suffices to set them growing freely, and they are then removed to cold pits or frames where there is no artificial heat. For a week they are kept close, and sun-heat is husbanded by covering up early in the evening.

The roots soon reach the manure at the bottom of the boxes, and they grow into fine dark-green strong plants. From a store-stock, managed as has been described, a large stock of cuttings is obtained, and pricked off at one time. The boxes being all of the same dimensions, they fit closely together, and a small compass holds a large number of plants. They require very little attention in the way of water, and are quickly removed to the flower-garden at planting-time, when they have to be reared at a distance from it.

Those who have sufficient pit accommodation to allow of leaves and dung being put into the bottom of pits, and then about 6 inches of nice light rich soil into which to prick the newly-rooted cuttings, and leave them there till planted out, possess an advantage not often met with. But even with such convenience, I

would as soon pursue the box system when they have ultimately to be removed to a distance.

In the case of those who cannot even accommodate newly-struck stock in heat after pricking off, the plants may be hardened off in the cutting-boxes, or whatever they are rooted in; and after they are well hardened, they may be pricked off into boxes or cold frames about the beginning of April. In this way they make fine plants by the end of May. Or, as is sometimes practised, a trench the same as for celery is thrown out, and filled up with hot leaves, over which a layer of light soil is placed, into which the hardened-off cuttings are pricked, to be merely protected by mats or canvas. And in the case of those who may not have the command of a corner in heat to strike cuttings in at all, their best and only way is to strike the required number of plants in autumn, and winter them as recommended.

The management of Verbenas has been thus minutely entered into, because much of what is applicable to their propagation and management applies to a good many other things used for flower-gardening; and in the case of these, what has been here said need not be repeated.

Soil suitable for Verbenas.—To have a long-continued bloom of Verbenas, the soil must be rich and loamy, but well drained. On dry sandy soil they bloom with great profusion for a time, but do not maintain it throughout the autumn so well as when the soil is of a heavier nature. Well-decomposed cow manure is the best for light hot ground, and leaf-mould for heavy retentive soil. On very sandy ground it is almost hopeless to expect the Verbena to bloom for any length of time. Under such circumstances, the bed must be forced or

made up with loam, or else the *Geranium* substituted for the *Verbena*, for *Geraniums* do better on hot soils.

Select List of Verbenas most suitable for Beds.—The *Geranium*, with its every shade of colour, has very much displaced the *Verbena* for beds, but some of the following varieties are still indispensable. Those marked* are most suitable for small collections :—

- * Admiral Dundas, red shaded with crimson.
Blondin, rosy pink, white eye.
- * Crimson King, crimson scarlet.
- * Defiance, scarlet.
- * Firefly, scarlet.
- * Lady Victoria Scott, crimson scarlet; very early bloomer, and very suitable for heavy rich soils.
- * Laura, pink.
Le Grand, white.
Lord Craven, pure purple.
Miss Trotter, scarlet; splendid for early blowing, and on heavy damp soils.
Mrs. Holford, white.
- * Purple King, purple—the best of all purples.
- * Snowflake, white.
Tweediana Grandiflora, red; very suitable for cold wet soils.
- * Venosa, violet.

SHRUBBY CALCEOLARIAS. — Autumn Propagation.—Though the Shrubby *Calceolaria* is occasionally subject to disease, and to die off in quantities, especially on dry soils and in hot summers, it is nevertheless easy to propagate and grow. It has the great recommendation of being a plant which not only does not require heat at any time, but it always does best when not subjected to a high temperature. Like almost every other plant, the details of its propagation may be varied according to circumstances.

Generally speaking, it flowers with such great pro-

fusion in summer, that it makes little or no growth from which cuttings can be had till October, and that is just the time when cuttings can be struck with most success. The cooler days of autumn, and its damp nights, are more favourable to growth ; and young growths suitable for cuttings are then usually produced in profusion. The cuttings may be put in with success from the 1st of October till the end of November ; but it is always best to take them as soon after the 1st of October as they can be had, and before they are touched with frost. In selecting the cuttings, choose those which are fresh-looking, of medium size, avoiding the largest sappy-looking cuttings, and those that are weak and wiry. They should not exceed 3 inches in length, nor have any incipient bloom-buds in them. If they have three joints, one to be inserted in the soil in the ordinary way, and two on which the leaves are to be left, it is quite sufficient. Such short compact cuttings are less subject to damp than the more succulent, long-jointed growths, and make more stubby young plants.

A cold pit or frame placed in a dry position, and into which can be placed a foot or more of any porous material that will not heat, such as spent leaves, or a spent cucumber or melon frame or pit, form excellent places for striking *Calceolarias* in ; and when a pit which has a hot-water pipe, to be used only in cases of severe frost, is at command, all the better. Over the material in the bottom place about 6 inches of light soil, such as equal parts loam and leaf-mould, and finish off the surface of the bed with two parts leaf-mould, two parts sand, and one part loam, sifted through a half-inch sieve. This, beat down firmly with the back of a spade, is ready for the cuttings, which should be inserted as

they are made, and not allowed to droop. Two or three inches apart, according to the bulk of the various sorts, is not too much to allow; for, if thicker, they are more apt to damp off and become drawn as soon as they begin to grow. A watering sufficient to wet the surface layer of sandy soil should be given at once.

They now require to be carefully shaded from sunshine, kept shut up close by day when dry and breezy, taking off the shading as soon as the sun ceases to shine on the frame; and when the weather is mild, leave a little air on each light all night. They require to be kept from frost when it occurs by coverings of mats, or any other dry loose material, such as hay or straw. In about two months the cuttings will be struck; and when the weather is mild, the glass should then be drawn off every day, except when it is rain or very damp, when, of course, they are best kept on and shut down. Every appearance of damp or mould must be removed through the winter, when frost is severe and continuous; and when they are not in a place where a hot-water pipe can be used, it is best to keep them covered up so long as the frost continues. And in the event of their being subject to a few degrees of frost, the coverings should not be removed when it thaws till the plants have thawed too, and then the covering should be removed by degrees; and their exposure again to light and air should also be gradual.

Those who have neither frame nor pit may strike Calceolarias under hand-glasses, and preserve them all winter in dry, sheltered spots, where there is no stagnant moisture, and where they can be covered up sufficiently during frost. And those who have merely a greenhouse without pit or frame accommodation, can strike them in

pots or deep boxes in a shady part of the greenhouse, where the sun does not reach them till they are rooted.

Calceolaria Ambassador and C. Havelock, as well as some of those similar in habit and constitution, are somewhat more difficult to manage than the yellows. On dry soils particularly they flower so freely that it is difficult to get cuttings from them ; and the old plants being so much exhausted, they do not succeed very well when lifted late in the season. The best way to keep up a stock of these is to plant a reserve, and prevent their blooming. By such means they furnish plenty of cuttings by the middle or end of September, when they can be propagated either in the way recommended for the yellows, or each cutting may be put singly into small pots filled with light rich soil, with a little pure silver sand round the base of the cuttings. The pots should be plunged in a cold frame in ashes or sand. When well rooted in these small pots, shift into 3-inch pots, and in spring the same plants will bear topping again. They can also be propagated by leaving them on the parent plant, removing a few leaves round the stems, and cutting them half through with a knife, and then mould up with a compost of half leaf-mould and sand. When well rooted, they can be potted into 3-inch pots. This method is applicable only to strong growths, such as are produced by plants not allowed to bloom.

Spring Management.—As in the striking of Calceolarias, so in their after management, various ways may be adopted, according to circumstances. When grown in beds or boxes, they generally thrive best after they are planted out, without ever having been put into small pots at all. What I would recommend, and have

adopted sometimes when suitable, in the absence of cold pits and frames, is to throw out trenches like those generally used for celery-beds, put 6 inches of rotten leaves in the bottom, and then 6 inches of light rich soil. Here the young plants, lifted with as little injury to their roots as possible, should be pricked out about the end of March, 6 inches apart each way. When all are planted, water well, and lay some trellis-work, or common stakes, across the trench, and cover with mats or canvas when cold weather renders it necessary. For the first fortnight after being transplanted they should be shaded through the day when the sun shines.

Thus managed, they make fine strong plants with very little attention. As they grow they should be looked over at intervals and topped, so as to keep them dwarf and well furnished. About three weeks before they are to be planted out, a spade, or any other sharp-edged tool, should be run along between the lines each way, cutting to the depth of 6 inches. This cuts off the roots of each plant from its fellow, checks them for the time, but causes them to make fresh roots nearer home; and the result is, that they lift with good balls, and scarcely receive any check when planted out. Should they droop when thus operated upon, give them a good soaking of water.

Amateurs and others requiring small quantities of plants may adopt a similar plan to this by transplanting them into boxes 6 inches deep, prepared much the same as directed for the trench, and otherwise managing them in the same way. In this case they can be lifted into any outhouse, or even covered over outside in case of spring frosts.

When from any cause the stock is not equal to the

demand, the points of the young plants strike freely in March and April in a gentle heat; but autumn-struck plants are in all respects to be preferred.

Soil most suitable for Calceolarias.—Like the Verbena, the Calceolaria requires a deep, rich, loamy soil to grow and flower it well throughout the season. They are very subject to die off in hot sandy soils, and at best do not bloom for any length of time. *Tagetes signata pumila* is the best substitute for Calceolarias on light sandy soils.

Select List of Varieties most suitable for Beds.—Those marked * are best.

- * Ambassador, bronze crimson; the best of the crimsons, 1 foot.
Amplexicaulis, lemon; fine for back lines and large beds, 1½ foot.
- * Aurantia multiflora, orange yellow; extra fine, 1½ foot.
- * Aurea floribunda, orange yellow; suitable for damp localities, 1 foot.
- * Canariensis, bright yellow; dwarf and dense habit; fine for small beds and dwarf lines; flowers well in dry soils, 9 inches.
- * Gaines' yellow, clear yellow; good, 15 inches.
- Havelock, bronze crimson, 15 inches.
- * Prince of Orange, orange brown; compact habit, 1 foot.
Princess Alexandra, buff; dwarf compact habit, 9 inches.
Victor Emanuel, scarlet spotted with crimson, 15 inches.
Yellow Prince of Orange, bright yellow, 1 foot.

CENTAUREA RAGUSINA—*Silver Foliage*, 1 to 1½ foot.—This beautiful silvery-foliaged plant ranks among the gems of its class. It is considered by some a difficult plant to propagate and winter. The way to manage it most successfully is to keep a set of plants in pots, and grow them outdoors all summer and autumn, and to house them before the wet and damp weather of late autumn sets in, by which time they are fine stately plants, some in 6-inch some in 8-inch pots, and sometimes larger specimen plants, as the case may be. To

keep them in the best state for affording fine healthy cuttings in spring—which is the best time to strike it—they require to be kept in a dry airy house, and to be sparingly supplied with water, just sufficient to keep them from drooping. It is a plant very liable to suffer from damp in winter, if freely supplied with moisture.

In spring each plant is found with a quantity of young shoots suitable for cuttings studded all round it. If these shoots are short, and without a bit of clear stem about a couple of inches long, the plants should be put into heat till they make a little growth. When ready, these side-shoots are cut off close to the main stem of the plant, and made into cuttings in the usual way. The pots or pans into which the cuttings are put should be well drained, and filled to within 3 inches of the top with equal parts leaf-mould, loam, and sand, and then filled up with pure sand. When the cuttings are put in, water well, and plunge them in bottom heat, where there is a temperature of 70°. Plunging is not absolutely necessary, although thus treated they root more quickly. They may be placed on a shelf in a vinery or pine-pit, and shaded only during very bright sunshine. During the time they are striking they must be kept moderately and regularly moist, but wet the foliage as little as possible. As soon as they have made roots about 2 inches long, they should be potted off into 3-inch pots; for if left till the roots extend more, they get broken off in shaking them out. They like light rich soil and a temperature of 60° after they are potted off, till the roots reach the sides and bottom of the pots; then they thrive best in a cool dry place.

When large specimen plants are not to be kept over another summer in a large state, they may be cut up

into large cuttings about 8 or 9 inches in length with a portion of a firm stem. These, put to the number of about ten or twelve into an 8-inch pot, and placed in a temperature of 60° to 70° in the full sun, root more quickly than, and as certainly as, smaller cuttings, and when potted off into 5-inch pots, make fine plants by May. The end of February is soon enough to begin taking cuttings for striking in heat. If propagation be deferred till April, strong cuttings root well in a cold dry pit or frame, and make fine plants by the 1st of June. Strong cuttings put in in the middle of October, when old plants in beds can be lifted and broken up, strike well in a temperature of 65°, and are ready to pot off by Christmas.

I have also increased this plant very successfully and with little trouble in April, by shaking out those that have been wintered in 6-inch pots, and that have perhaps three to four principal stems, and splitting them off down through the collar with a portion of the old roots attached to each. Those potted into 5-inch pots and just placed in cold frames, make beautiful compact plants by the end of May. When planted out, the *Centaurea* is very impatient of cold, damp, ill-drained soil; and when in such soils it frequently rots off in wet weather in autumn, when it should be at its best. A good plan is to raise it above the surface, when planted as centres or panels, on a ring or two of stones or bricks. A light, rich, dry soil suits it best. It is a plant that does not lift well in autumn; and the best way, when a reserve cannot be kept, is to plunge it in pots. Autumn propagation is seldom so successful as that of spring. If put in in August or September, they should be placed in a dry, airy, cool house, where

they can have partial shade. *C. argentea* and *gymnocarpa* are also very effective sorts, and do well under the management described above.

VERBENA VENOSA—*Violet*, $1\frac{1}{2}$ foot.—This old and distinct species of *Verbena* is, when it does well, one of the very best plants we have for large beds, lines, and ground-works. It is raised from seed sown in the early part of February, in a temperature of 65° to 70° . The seed should be steeped for several days before it is sown, and never allowed to become dry afterwards. It should be sown on an even surface of loam, leaf-mould, and sand in equal proportions, and very slightly covered. After watering well through a fine rose, cover the mouth of the pan or box with a pane of glass to prevent evaporation, and shade from the sun till the seed vegetates and the young seedlings appear. It is very irregular in its vegetating, and is sometimes pricked off from the same seed-box for nearly two months. As soon as the young plants form two rough leaves, prick them off into rich soil about $1\frac{1}{2}$ inch apart, and keep them in heat till they meet in the box; then put them into a cool place near the glass.

It can be propagated by taking up its roots in spring, and cutting them into as many pieces as there are buds on them, placing these thickly in boxes, and putting them in a brisk bottom heat till they appear above ground; or the long fleshy roots can be put whole into boxes, sprung in heat, and the plant struck from cuttings like other *Verbenas*. Seed sometimes does not vegetate freely, and it is well to have a reserve of roots to fall back upon. If left in the ground to spring of its own accord, it comes up too irregularly. It is a

grand autumn-flowering plant, but for early summer bloom it will not suit, it being long in coming into bloom ; but when in bloom, it holds on till most others are over. It will not do well for poor hungry soil, as it must have rich soil ; and in cold backward situations it does not bloom sufficiently early to warrant its being grown. Under favourable circumstances it does remarkably well, and affords a violet shade of colour, which is not easily got in any other plants suitable for grouping.

LOBELIA ERINUS SPECIOSA—*Blue, 4 to 6 inches.*—This popular and lovely little flower is the principal blue of the parterre. One of its chief recommendations is, that it is easy to manage: It can be had sufficiently true for all practical purposes from seed, when carefully saved. On cold soils and in wet localities it does not flower so profusely from seed as when perpetuated by cuttings. Either way it is easily managed.

When raised from seed, this should be carefully selected from the plants that are most twiggy in habit, and that yield the greatest amount of bloom of the best blue. It should be sown, if possible, in September, and wintered in a cool dry place near the glass : a greenhouse temperature is sufficient. Autumn sowing is the most desirable when early blooming is an object. When sown in heat the first week in February, and preserved in stove-heat for a couple of months, it makes fine strong plants by the end of May ; but those who can command nothing more than a greenhouse temperature should always sow in autumn. Sown in September, it vegetates freely without artificial heat.

A pot, a pan, or box, according to the amount re-

quired, should be well crocked, and filled up to within an inch of the top with light rich soil; and then a layer of finely-sifted soil, nicely smoothed and levelled, makes the vessel ready for the seed, which should not be sown very thickly, and not covered with any soil. The surface should be equally pressed down with the palm of the hand or a piece of smooth wood; then water gently through a fine rose, and cover over with a bell-glass or piece of glass, and shade till the seed vegetates; then the shade and glass should be removed, and the young plants gradually inured to light, but not scorching sunshine, till they get a good hold of the soil. The spring-sown crop should be placed in stove-heat, and kept there till the plants are fit to handle and can be pricked off; then put them for a few days into an intermediate temperature.

In pricking off, use the same sort of boxes recommended for *Verbenas*, prepared with the same soil, only let the surface half-inch be made fine by being passed through a quarter-inch sieve. Each box $2\frac{1}{2}$ by $1\frac{1}{2}$ feet holds 200 plants. They should be kept in heat till they nearly touch each other in the boxes, and then turned into cold pits and frames and hardened off.

To propagate by cuttings, a few dozen store plants should be grown outdoors all summer, and never allowed to flower: in this way they form fine hardy growing plants. They can be wintered anywhere, where frost can be excluded, and that is not damp. In February they are shifted and forced for cuttings, and managed the same way as recommended for *Verbenas*.

POLEMONIUM CÆRULEUM VARIEGATUM (Greek Valerian)

—*Silvery Variegated Foliage*, 1 foot.—This variegated form of Jacob's Ladder, which is a native of Britain, is one of the prettiest and most useful plants for lines and edgings, and though yet comparatively scarce, must eventually become a very popular favourite. It has a striking resemblance to a variegated fern. Being a British plant, it is of course perfectly hardy; but my experience of it for some time leads me to recommend its being lifted about the end of October, just before its foliage begins to fade, potted in light, rich, sandy soil, and wintered either in a dry cold pit or a vinery or peach-house at rest, from which frost is excluded. It should not be allowed to get dry through the winter. It begins to grow in spring in such a situation about the beginning of February; and as soon as it has formed a few young leaves 2 or 3 inches long, is the best time to propagate it. It then begins to emit roots from the stem of each crown; and when it does that, shake it out and divide into as many pieces as there are single crowns, preserving the roots as entire as possible. Pot them singly and deeply up to the leaves in 3 or 4 inch pots; place them in a cold frame, and shade from the sun, and keep them regularly moist. They will not bear drought.

If left in the ground all winter, it loses its beautiful variegation to a great extent, and in many cases entirely. This does not occur when lifted, and hence the reason for lifting it at all. When well rooted, it should be planted out in a rather rich soil. When it shows any disposition to throw up flower-stems—which it rarely does—they should be cut away. By some this is considered a difficult plant to manage; but, treated in this way, it is not found to be so.

GLADIOLI.—It would be difficult to describe the beauty to which these have been brought. They are fine plants for back lines, and can be used with striking effect planted thinly in large beds filled with dwarfer and more compact blooming plants. Some of the sorts—such as *Brenchleyensis* and *La Poussin*, for instance—throw out lateral flower-spikes after the leader has gone out of flower, and such varieties flower for a long time.

They are very easily managed plants. If wanted to bloom early, they should be potted singly and started in a little more than greenhouse temperature, and planted out early in May when about 6 inches high. But to flower in the latter part of August and onwards, they need not be potted where there is a suitable soil; all that is necessary is to plant them where they are to bloom at once about the middle of April. Each bulb, when planted, should be covered with a little light sandy soil; and when the soil is levelled over them, they should not be more than 2 inches deep. They thrive best in a deep, rich, sandy loam; and in such soils, in favourable localities, they make splendid bulbs in this country. They should be left in the ground as long as there is no danger of frost getting at the bulbs; and while the foliage keeps green, it is best to protect them by covering the surface of the bed with any light porous material till they have well matured their bulbs. I rarely lift them before the middle or end of November; indeed, they keep better in dry soils in the borders than by being lifted, but care must be taken that frost does not reach the bulbs. Generally, it is necessary to lift them, to allow of a different arrangement every year. The best place to keep them in during the winter is in

any dry place where they will be cool and free from frost. The beds intended for Gladioli should always be trenched, well drained, and rich. They are most suitable for amateurs, as they can be kept through the winter with little trouble, and are cheap to purchase now. If wanted to bloom early and in cold localities, they will spring nicely in a room window in pots, and kept moderately moist. In good soils they double themselves every year. They can also be increased by preserving the young bulbs about the size of peas, which form about the sides and bottoms of the parent bulbs. These should be preserved by being mixed with light damp soil or sand all winter, and sown in spring in rows a foot apart, and two inches between each bulb. In two years they make fine blooming bulbs.

Select List of Gladioli.

- Adèle Souchet, white, shaded with white ; large, fine shape.
- Bertha Rabourdin, pure white, shaded with carmine ; very fine.
- Brenchleyensis, deep crimson ; extra fine for lines and masses.
- Charles Dickens, rose tinted, and striped with chamois and carmine.
- Comte de Morny, cherry, with white blotches ; very effective.
- Cuvier, amaranth, shaded with purple ; very large.
- Decandolle, cherry, blazed with red.
- Dr. Lindley, rose ; lower petals blazed with carmine.
- Eduia, white, stained with violet.
- Emperor Napoleon, vermilion, with white spots ; extra fine.
- Eurydice, pure white, blazed with rose ; very fine.
- Fulton, vermilion red, with purple stains ; large.
- Imperatrice Eugenie, white, suffused with rose.
- James Carter, orange red, spotted with white.
- James Veitch, crimson, stained with violet ; large and fine.
- John Waterer, cherry, with white stains.
- Lord Byron, brilliant scarlet, stained and streaked with white ; most effective.
- Le Poussin, top petals light red, under ones pure white ; most delicate and beautiful.

Madame de Sevigné, cherry, stained with white.

Madame Eugene Verdier, scarlet, spotted with purple.

Madame Vilmorin, rose, with white centre, with darker rose edges ; extra fine.

Maréchal Vaillant, scarlet, stained with white.

Meyerbeer, bright red, streaked with vermilion ; fine shape and substance.

Milton, white, tinted with rose and blazed with red ; very fine.

Napoleon, scarlet, under petals blotched with white ; one of the best.

Newton, crimson, streaked with white ; very pleasing variety.

Oracle, cherry rose.

Penelope, fleshy white, lower petals yellowish, with stripes of carmine.

Prince of Wales, bright red, with white blotch ; extra fine.

Princess of Wales, white, blazed with carmine.

Shakespeare, white, blazed with rose ; large and showy.

Solfaterre, sulphur yellow.

Stephenson, cherry, striped white.

Velleda, orange rose ; large and showy.

Vulcan, vivid crimson.

Walter Scott, flesh colour, spotted with yellow.

DAHLIAS.—These old favourites are perhaps not now so much employed as their merits deserve. Very gorgeous masses can be made of the taller-growing sorts when pegged down to make them suitably dwarf. But now that the race of compact dwarf-growing varieties has been increased and improved, they form a very effective group. The dwarf sorts, too, come much earlier into bloom than tall varieties ; and though they are lacking in form, they yield a great and even mass of bloom. Their tubers are, with a few exceptions, not so subject to decay as some of the high-bred show flowers ; and this is no small recommendation, now that so many tender plants have to be wintered with care.

As soon as leaves and flowers are destroyed by frost the roots should be lifted, or if inconvenient to do so

immediately after frost, a little earth should be drawn up round their stems, to prevent a second night's frost from injuring them near the surface of the soil; for if injured there, the stem is more likely to decay downwards and cause destruction to the collection of buds at the base of the stem, upon which their life depends. Lift the roots carefully, cutting the stems away about 6 or 8 inches from the vital part of the tubers; then allow them to remain three or four days in a cool dry shed, to dry them and the little mould that adheres to them; after which, lay them close together on a dry floor; and when placed, put fine very dry soil all round and over them, filling up all the crevices about the tubers and up the stems till the vital parts of the root are covered about 3 inches. The storing place should be cool and dry. They should be examined about the end of January; and should they be looking well and fresh, covered over again for a month; but if decay be doing its work, all the suspicious-looking tubers at least should be put into heat to excite them into growth. But when all goes on well, the 1st of March is early enough to place them in heat, except in the case of those which are to be as much increased as possible, and these should be started early in February.

Any place where they can be put in boxes, or on the shelf or floor of a house, and covered over with some leaf-mould, with a temperature of 60°, will start them nicely. Most of the dwarf sorts are very easily struck from cuttings, and should be put in, when 3 or 4 inches long, in a place suitable for striking Verbenas and other bedding plants. Prince Arthur, which is probably our finest dwarf Dahlia, is very shy to strike, and succeeds best when allowed to remain growing on the tuber till

it throws out a root or two among the leaf-mould, which it does pretty freely. Those growths that root, if carefully removed with their roots and potted, always do well. Those which do not throw out roots are potted with a portion of the tuber attached. This variety keeps badly, and a stock of pot roots should always be held in reserve. When rooted, the free sorts, such as *Zelinda*, do well pricked off into boxes and 8-inch pots, instead of potting them off. Into an 8-inch pot about ten plants are put. Tender sorts require potting-off singly. For cold late soils it is best to pot all; but in light early soils they suffer very little when shaken out and planted and watered at once, and much less room is required for them. They should be grown in a rather rich soil, well hardened off before being planted, and not planted till at least the last days of May, even in favoured localities.

When it is desired to keep a stock of pot tubers, and the weakest cannot be spared for that purpose when the others are planted, the best way is to put in cuttings from the short side shoots about the middle of July. They root freely in bottom heat, and a number can be kept in a small space by using narrow deep pots. This is not necessary, except in the case of those which are troublesome to keep in the ordinary way. *Prince Arthur* is the worst I have grown, and even it keeps pretty well when lifted and wintered as has been described.

Amateurs who cannot command the aid of a glass house or frame, with artificial heat, will find Dahlias not easily managed. I have known *Dahlia* roots kept well and flowered for years in succession, in dry soils especially, by simply cutting them down to the surface of the ground, and covering above and all round the roots with litter, ashes, or any other material that will

exclude the frost. Indeed, Dahlia roots are probably as safe in this position as in any other. They start and come away with several shoots, which should be thinned out to one or two as soon as it can be seen which are the best to leave.

Select List of Dwarf Dahlias.—For a small collection those marked * are best.

- * Alba Floribunda, best white, 2 feet.
- Captain Ingram, crimson, 2 feet.
- Gem of the Dwarfs, crimson, tipped with white, 2 feet.
- * Pluton, fine yellow, 2 feet.
- Orb of Day, fine yellow, 2 feet.
- * Prince Arthur, best crimson, 2 feet.
- * Scarlet Tom Thumb, best scarlet, 16 inches.
- Titian, yellow, 2 feet.
- * Zelinda, purple, 18 inches.
- * Zelinda, yellow, 20 inches.

ANAGALLIS (PIMPERNEL) SANGUINEA, *Crimson*, 6 inches
 A.—EUGENIE, *Light Blue and White*, 6 inches—A. GRANDI-
 FLORA CÆRULEA, *Blue*, 6 inches.—Some of the varieties of Anagallis are very effective in beds, especially where the soil is dry and warm, and where they can be fully exposed to the sun. They shut up in dull weather, and on that and other accounts they are most suitable for dry warm localities. They can be easily raised from seed the same way as recommended for Lobelia speciosa, but they cannot be relied upon as true. By cuttings they propagate very freely in spring and autumn. The best way is to prepare a few store-pots in autumn, and force for cuttings in spring, when they strike freely in pure sand, in bottom heat, along with the generality of other flower-garden plants. They should be potted off singly or two in a pot, as they do not bear shaking out very well. They require being manured slightly with

leaf-mould in hot dry soil. Indeed, they are only to be recommended for such soils, and for planting round the edges of vases and rustic baskets.

ANTIRRHINUMS — 1 to 2 feet high. — Some of these are remarkably showy, and desirable for mixed borders. They can be raised from seed sown in March for autumnal blooming the same way as Stocks; and to stand the winter for early flowering, they require to be sown and managed the same way as directed for Biennials. Named sorts must be perpetuated and propagated from cuttings, which strike very freely both in autumn and spring in the same way as Verbenas. When rooted, pot or prick them into boxes or frames.

Admiral, orange and scarlet.
 Ambassador, violet purple, orange centre.
 Argus, lilac, tipped with orange.
 Brilliant, crimson.
 Charlemagne, yellow.
 Cyrus, buff.
 Dr. Greville, violet rose, streaked with buff.
 Ensign, white tube, crimson lips.
 Harlequin, white, mottled with rose.
 Hendersonii, white, with violet belt.
 Lacandeur, rosy purple, white lips.
 Leopard, bronze yellow, mottled with crimson.
 Major Stewart, crimson, with orange centre.
 Nina, white mottled rose.
 Prince Charlie, blush, streaked with violet.
 Royal Albert, yellow, striped with red.
 Sir Colin Campbell, crimson.
 Sir G. Douglas, carmine.
 Sunbeam, white, striped with peach.
 Voltaire, white.

AMARANTHUS CAUDATUS (*Love Lies Bleeding*), *Crimson*, 2 to 4 feet. — When well managed, this is one of the most imposing and striking-looking plants that can be

grown for back lines and as single specimens. I have grown it in lines 4 feet high, with its crimson ropes pendant to the ground. To grow it well, and get it early to perfection, it should be sown in the beginning of April in a slight hotbed, very similar to the manner in which Celery seed is sown. It always does better sown in a slight hotbed than sown in boxes in heat. When about 4 inches high, it should be transplanted to its blooming position—well watered, and shaded by a few evergreen boughs, or by being covered with flower-pots through the day, for a short time. The soil should be deep and rich; and when it has arrived at its full size, a few of the leaves removed show off its crimson racemes to advantage. Of course it succeeds very well sown in the open border in the end of April, but it never attains the same magnificence as when brought forward earlier.

AMARANTHUS MELANCHOLICUS RUBER, *Dark Carmine Foliage*, 1 foot.—This crimson-foliaged annual does very well in some parts of England, but not in northern climates. It is easily managed. Sow in heat in March, pot off singly when about 2 inches high, and grow into good plants before being planted out, which should not be before the very end of May. It likes a rich soil and a warm situation, and where it thrives is very effective.

ASTERS.—Though too stiff and formal-looking for grouping, the various sorts of Asters are very handsome for mixed borders. The treatment recommended for Love lies Bleeding is suitable for these, and they can be very easily raised in pots, pans, or boxes, in a temperature of 55° to 60°; and if they are pricked off in a

small state they transplant much better than when allowed to remain in the seed-pans.

AGATHEA CŒLESTIS, *Pale Blue*, 9 inches—A. CŒLESTIS VARIEGATA, *Variegated Foliage*, 6 inches.—Although this plant is not so much grown as it was at one time, it is worth enumerating and cultivating, and for some purposes deserves a place among bedding plants. It produces a very pretty effect by mixing it with Mangles' Variegated Geranium. Autumn-struck plants generally flower best. Cuttings should be put in pans or boxes in August, and in spring pot them off and give them a little heat for fourteen days. The variegated form of this plant is rather shy of growth; rich dry soil is most suitable for it.

ARUNDO DONAX VARIEGATA, 4 to 8 feet.—This plant has been truthfully described as 'the most stately and graceful of all known variegated grasses of the garden. It forms a robust vigorous plant of majestic habit, with long, broad, elegantly decurved leaves $1\frac{1}{2}$ to 3 feet in length, and 2 to 3 inches in width, picturesquely marked with broad silver margins their whole length. As a single specimen, it forms a very ornamental and diversified feature.' It is, however, from the height to which it attains, best for back lines, and as such it has a distinct and tropical appearance, while it is quite hardy: it thrives in any good garden soil, but does best in peat or loam heavily manured with leaf-mould. It is propagated by division of the root in spring.

AGAPANTHUS UMBELLATUS FOLIIS VARIEGATIS.—*Foliage 18 inches, blooms $2\frac{1}{2}$ feet.*—Being a variegated form of the

well-known *A. umbellatus*, it is all but hardy. When this plant becomes more plentiful and better known, it cannot fail to take a high position for beds. Its foliage is very lovely at all times, while it yields large umbels of blue flowers that last in bloom a long time. It is easily propagated by dividing the plants in spring, and potting them singly till well established, when it may be planted out early in May. It requires rich, rather moist, soil to grow it to perfection.

ARABIS LUCIDA VARIEGATA (GOLDEN ARABIS) — 3 *inches*.—This is probably the most lovely dwarf golden-leaved hardy plant we have. It is exceedingly useful for front lines and edgings. It is very easily propagated by division either in spring or autumn. Lift and divide it about the end of October, and plant it out either where it is to remain, or in nursery beds in light soil, and transplant it in March. To get it in its finest dress, it must be grown in rather heavy rich soil, and allowed to remain undisturbed for a few years. It must never be allowed to flower, otherwise it never makes such fine foliage.

ARABIS ALPINA VARIEGATA—A. MOLLIS VARIEGATA—*Foliage, 6 inches*.—These two are similar to *A. lucida* variegata, only they are stronger growing, and the variegation is white instead of gold. Both are useful plants, either when white flowers are required in spring, or variegated dwarf foliage in summer and autumn. They all do well with the management recommended for *A. lucida*.

AGERATUM MEXICANUM, *Lavender, 18 inches* — A. MEXICANUM PRINCE ALBERT, *Dark Lavender, 14 inches*. —Is a very useful plant for large beds, and being of

a bluish-lavender colour, it has not in that respect many rivals. It is very easily managed, and a few pans of cuttings struck in a close frame in September are sufficient to yield a large stock for spring propagation, which is exactly the same as for Verbenas. Where there is no convenience for spring-striking, the whole stock must be struck in autumn. It winters very well in boxes; and in spring keep the plants well pinched in, as it is apt to become tall and slender. It flowers best and longest in rich loamy soil.

BARRET'S CRIMSON BEET, *Bronzy Crimson*, 1 foot—DELL'S BEET, *Dark Crimson*, 1 foot.—The foliage of this Beet, when quite true to name, is of a lustrous bronzy crimson, and in growth it is very regular and compact. I do not know of any dark-foliaged plant that is so generally effective, although some object to it simply because its roots are eatable. It thrives well in any ordinary garden soil. It should be sown the last week of April where it is to remain, and when 2 or 3 inches high thinned out to 10 inches between each plant. This variety does not run to seed, and it is much more effective than Perilla.

BELLIS PERENNIS AUCUBÆFOLIA—6 inches.—On cool heavy soils, and in shady situations, this Daisy is well worth growing for summer edgings; but in dry soils it looks shabby in hot weather. It is a desirable plant for amateurs, being of course hardy, and easily managed. I have seen it flower well in autumn; and, with its scarlet blooms and variegated foliage, it is an interesting little plant.

CINERARIA MARITIMA—*Silvery-grey Foliage*, 1 to 1½ foot.—The superiority of *Centaurea Ragusina* has somewhat

eclipsed this very useful silvery-foliaged plant. The quickest way of getting up a stock of it is to purchase seed, and sow in pans, in light rich soil, the first week of February. Placed in a temperature of 65° to 70°, it vegetates in a few days. As soon as it forms two rough leaves, prick it off into boxes 2 inches apart, and place it in heat again till the young plants almost meet in the boxes, after which it grows freely in a cold pit or frame. In this way it makes fine strong plants by the middle of May, and transplants safely even without any ball. It does, not, however, get its best coat of silvery down the first year. The best way to get the plant in all its beauty is to propagate from cuttings in spring, choosing the twiggy side-shoots. By sowing the seed at mid-summer, and keeping them till the next year before planting out, they become very white before the end of the season.

CERASTIUM TOMENTOSUM (SNOW IN SUMMER) — C. BIERBESTEINII — *Silvery-grey Foliage*, 4 inches. — This well-known lovely little hoary plant is one of the most useful we possess for parterre work, and is also one of the easiest managed. A good practice is to bed out a quantity of it in reserve beds at the end of October. It is taken without any preparation, simply tearing it from the old plants, and laying it in thickly like Box. It roots through the winter, and is transplanted in spring to where it is to remain. It can also be planted out in March, in the open beds, in single cuttings without roots; and by keeping it watered, if the weather be dry, it begins to grow very freely, and in this way it makes exceedingly neat lines. The single cuttings are dibbled in, 3 inches apart. It should never be allowed to bloom

if required to be in fine foliage all summer and autumn. It succeeds in almost any sort of soil, and can be cut into any desired dimensions.

CAMPANULA CARPATICA (CARPATHIAN BELL-FLOWER)—*Blue, 1 foot.*—A very useful edging hardy plant, which is easily propagated either by division of the roots in spring, or by seeds, from which it comes perfectly true. The seed should be sown in a temperature of 60° in February; and when large enough to handle freely, prick it off into boxes and keep it in heat for a few days, till it begins to grow freely; then turn it into cold frames, and plant out early in May in rich soil. This plant lasts a long time in bloom on heavy rich soils, but in hot situations and on light soils it is apt to succumb before autumn. The seed-pods should be picked off as they form, and it should be heavily watered occasionally in dry weather. It is a very useful plant for those who have no glass, as it is perfectly hardy, and easily increased by division. About the latter part of March the roots should be lifted, and the ground trenched and manured, and the roots replanted, and watered if the weather be dry.

CHEIRANTHUS CHEIRI (COMMON WALLFLOWER).—For its sweetness, if for no other reason, the Wallflower should find a place particularly in mixed borders. On account of its being so easily managed, it is very useful for amateurs, with little convenience for tender plants.

The single varieties are as easily raised from seed as a bed of Cabbage, sown either in rows or in beds on light garden soil. For summer and autumn flowering, the best time to sow is in the beginning of July. When about 2 inches high, prick them out into nursery bed,

in rows about 4 inches apart ; here they may remain till the borders are dug in spring, when they should be lifted with balls, and planted where they are to bloom. By picking the seed-pods off as they form, the season of blooming is prolonged.

The double varieties must be propagated by cuttings, and May and June are good time for putting them in. They strike freely under handglasses, in light sandy soil, in a shady situation. When rooted, plant them out into beds as recommended for seedlings. They will grow and bloom in very barren soil ; but to have a long continuance of bloom, they must have rich dry soil.

COLEUS VERSCHAFFELTI—*Dark-brownish Crimson Foliage, 1 to 3 feet.*—It is a great pity this fine dark-foliaged plant does not succeed except in dry warm situations in the south of England. In Scotland, generally, it soon loses its beauty, and as the dews of autumn come on, rots away. It strikes most freely in bottom heat, and an old plant or two will give hundreds of cuttings in heat in spring. It requires a stove or intermediate temperature to keep it through the winter.

CHRYSANTHEMUM SENSATION—*2 to 3 feet, but can be pinched and kept dwarf.*—A beautiful variegated-leaved Chrysanthemum recently introduced, and most useful for the centres of large beds or back lines, as also for intermediate positions when kept pinched. A few old plants potted up in autumn yield abundance of cuttings in spring, and it strikes as freely as any common Chrysanthemum. It can either be pricked off into boxes when rooted, or potted singly into small pots. Moderately rich soil brings out its variegation best.

DACTYLIS GLOMERATA VARIEGATA (Variegated Cocksfoot Grass)—1 *foot*.—A variegated form of a native grass, and one of the most useful edging plants we possess. It is most easy of propagation by division of the plants either in autumn or spring. It requires a rather heavy soil ; but in this respect it is not very fastidious, and thrives in almost any soil, if rich. If the soil be poor, it is apt to get rusty-looking in dry autumns. It should not be allowed to flower. It bears clipping to keep it dwarfer. *D. glomerata variegata elegantissima* is said to be superior to this variety, but I have not yet seen it.

FUCHSIAS—*Various Heights and Colours*.—Many of these are most beautiful border plants, and when grown as pyramids, are splendid for centres in beds. For amateurs, the hardy varieties, such as *Riccartonia*, are very useful, and stand the severest winters if their roots and collars are well protected with a little litter. *Fuchsia Meteor*, with its crimson foliage, makes a most effective bed in some places. It is as easily managed as any of the ordinary Fuchsias, and strikes freely in autumn and spring in a little heat. The beds should be made rich with well-rotted manure. *F. Carolina* is an excellent variety for planting out in beds as dwarf standards, it being a vigorous grower and free bloomer. *Fuchsia Vengeur*, with white corolla and red sepals, makes a good bed, and so does *F. Blanchette*. They all delight in rich loamy soil when planted out. *Golden Fleece*, lately sent out, is said to be fine. The hardy *F. Riccartonia* is very useful as a shrubby plant, and in the case of those who have not much glass, it may be used for the centres of large beds.

GNAPHALIUM LANATUM—1 *foot to 18 inches*.—A silvery-

foliated plant suitable for edgings, and perfectly hardy. It is very easily propagated by division in spring, and is whitest and most compact on dry poor soils. It bears pegging down, and should never be allowed to bloom.

GAZANIA SPLENDENS—*Orange, 4½ inches.*—Where this appears in its best dress it is a most effective plant, and most useful for various purposes. It is very easily propagated either in autumn or spring. In autumn it strikes very freely, managed in all respects like yellow Calceolarias, and can be wintered and managed in the same way. It strikes equally freely in heat in spring; and it is a good plan to propagate half the stock in autumn, and top them for cuttings in March, and prick them off and manage in other respects like Verbenas. Of the two sets of plants, those struck in spring are preferable. It is a most accommodating plant, and amateurs can easily strike it in boxes in August, placed out of doors, where they get the morning and afternoon sun, from which it is not necessary to shade. When rooted, place it in a hot sunny place till housing time, when it can be wintered in cold frames or pits where it does not get more than a few degrees of frost. Some have planted it on poor soil with the view of making it flower more freely, but it does best in rich soil when well exposed to the sun. It does very well in winter with 'spare-room' treatment.

HUMEA ELEGANS—*Brown, 5 to 6 feet.*—A half-hardy biennial, and very useful decorative plant, especially for back lines and centres to groups. The seed should be sown in May, and being very small, must just be covered, but no more, with finely-sifted sandy soil. It will

vegetate freely in greenhouse temperature; indeed, it comes up in the open air self-sown in light warm soils. Cover the seed-pan with a little moss or a pane of glass till the young plants appear; then place in the light, to keep from drawing. When fit to handle, prick off into pans or boxes. Pot off singly, when 3 inches high, into 4-inch pots, in which they will winter. In March shift into 7-inch pots, in which, by the middle of May, they make fine plants for planting out. It should never have more than greenhouse temperature. When planted out, the soil, if not very good, should be made up for it in pits, as for Dahlias, with half loam and rotten manure. In fine loamy soils, all that is necessary is to enrich it and trench it.

HOLLYHOCKS.—Splendid autumnal plants for planting in shrubbery borders or back lines to one-sided long borders. I have generally used them in the latter by planting either alternately with *Humea elegans*, or in single colours by themselves, planted 18 inches apart. The small shoots, which can be had from the bottom of these in July, cut into pieces with a bud to each like a Vine eye, strike freely under handglasses in light, rich, sandy soil. When well rooted, they should be potted singly in 3-inch pots, in equal parts loam, rotten dung, and a little sand. They soon establish themselves, and can be wintered in cold frames where not subjected to severe frost, and kept dry. Some of the more tender sorts are all the better of being in warmer quarters through the winter. Old roots of scarce sorts may be lifted and potted, and forced in heat, like a Dahlia, for cuttings, which strike freely in bottom heat. The best time to plant out is about the end of April. The ground should

be trenched and heavily manured. They thrive best, at least continue longest in bloom, and give the finest bloom, in heavy loamy soils. They should not be allowed to grow very tall if fine blooms are the object. As lines for general effect, we top them at 7 feet.

The following are first-rate varieties :—

Earl of Rosslyn, scarlet.	Cygnets, pure white.
Fred. Chaters, pale yellow.	Earl of Breadalbane, scarlet.
Hercules, rosy crimson.	Gem of Yellows, deep yellow.
James Anderson, rosy peach.	Glory, red.
Lady Middleton, blush.	Lady Rokeby, blush.
Lady W. W. Wynn, rosy blush.	Lord Clifden, crimson.
Lord Lyon, cherry rose.	Lord Rokeby, magenta.
Mrs. Hastie, light rose.	Mrs. Downie, salmon rose.
William Thomson, rosy crimson.	Mrs. Bruce, carmine.
Consul Bada, crimson.	Mrs. F. M'Kenzie, scarlet.
Countess of Craven, peach.	Purple Emperor, purple.
Charles Eyre, dark crimson.	The Prince, buff.

HELIOTROPIMUM VOLTAIRIANUM, *Bluish-purple*, 1 foot—
H. PERUVIANUM, *Pale-blue*, 1 to 1½ foot—H. BEAUTY OF THE BOUDOIR, *Dark-purple*, 1 foot—H. MISS NIGHTINGALE, *Dark*, 1 foot.—These are great favourites, and from their delicate perfume should always have a place in the flower-garden. Cuttings put in in August root freely in a very gentle heat, and may be wintered in pans or boxes. They should be potted-off singly in spring, and placed in heat till they fill their pots with roots. If planted out from the boxes, they suffer very much should the weather be dry at planting time. A few old pot plants wintered and forced for cuttings in spring, and struck the same way as Verbenas or Petunias, and potted off, make fine healthy plants. Indeed, spring-struck plants are preferable. All winter they like a little more than greenhouse temperature if wintered in

cutting pots or boxes, especially Beauty of the Boudoir. They should not be planted out before the very end of May, and they do best in rich dry soil.

IRESINE HERBSTII—*Crimson Leaves, with Stems and Veins of Carmine, 1 to 2 feet.*—There has been considerable variety of opinion as to the value of this plant for outdoor service, but there is now no doubt of its claims to a place among useful bronzy-leaved plants. It requires a deep, very rich, moist soil to do it justice. The wet summer of 1867 has proved this to be a chief feature in its treatment, as it never was seen so effective as during the continual dull and wet weather of the autumn of that year. It is very easily propagated, and grows very freely in heat; and a score or two of store plants yield abundance of cuttings in heat in spring. When rooted, it should be potted-off singly into 4-inch pots, and grown into good plants before being planted out, which should not be before the very end of May or beginning of June. In dry soils it should be heavily manured and copiously watered. It winters better in a greenhouse than *Coleus Verschaffelti*, but best in an intermediate or stove temperature.

KONIGA VARIEGATA—*Variegated Alyssum, 6 to 8 inches.*—An old favourite that holds its place well, and is most useful for ground-work and edgings as well as lines. A few store-pots propagated in autumn yield abundance of cuttings in heat in spring. In all respects it does with the same treatment as *Verbenas*. The soil should not be rich, or it will not be so prettily variegated.

LOBELIA ERINUS PAXTONII—*Blue and White, 4 inches.*—This is the only other dwarf *Lobelia* besides *speciosa* that I have found satisfactory. It does not come true

from seed, but is easily managed in exactly the same way as that recommended for propagating *L. speciosa* from cuttings. It is sometimes subject to damp off in winter, and the best place to winter it is in a dry, light, airy place, in greenhouse temperature. It requires rich, but not a heavy soil.

LOBELIA—*Perennial Herbaceous section, various, 2 to 3 feet.*—This is now a very interesting group of plants. Even old *Fulgens* and *Cardinalis* were splendid border plants of peculiarly rich colours. Many fine varieties have been introduced of late years of various shades of colour, and they are very effective mixed-border plants. They are easily increased by division of the plants in spring. To grow them well, they must have good rich soil.

LINUM GRANDIFLORUM—*Brilliant Carmine, 1 foot.*—One of the most beautiful and useful annuals for beds. It produces large rich carmine flowers in great profusion. Sow about the end of April where it is to bloom. The seed should be steeped in water twenty-four hours before it is sown. When about 2 inches high, thin it to about 6 inches between plants. By picking off the seed-vessels the blooming season is prolonged. Dry, moderately rich soil suits it best.

NEMOPHILA INSIGNIS.—Where a splendid mass of blue is the object for a couple of months in autumn, this is a most effective thing. It quite eclipses *Lobelia speciosa* seen at a distance, and in cold localities it is perhaps superior to the *Lobelia*, especially when the latter is from seed. To have a fine bed of it in August and September, sow in the first days of June, and when

well up thin out to 6 inches ; when required earlier, it must be sown earlier. It does best in a dry soil.

NIEREMBERGIA GRACILIS—*White, veined with Lilac, 8 inches.*—This slender-growing, delicate-looking plant is very useful for edgings and small beds. It strikes freely in heat in autumn and spring. When rooted, it should be potted singly, or two or three in a 4-inch pot, so that it can be planted out with a ball ; for if entirely shaken out, it takes some time to recover the check. It flowers most freely in hot sandy soils. In cold wet districts it does not flower well, but is suitable for the edges of vases and baskets.

NEPETA TEUCRIFOLIA—*Bluish Lavender, 9 inches.*—‘ Now that the tide of taste has fairly set in in favour of hardy plants suitable for bedding, it is curious that the merits of this plant as a bedder have not been publicly recognised, so far as I have seen. I have grown it in quantity for this purpose for the last seven years, and every year it gains more favour here. The individual flowers are certainly poor enough ; but as a bedder it has everything to recommend it, so far as my experience has gone on a moist soil—colour, habit, and duration, when properly managed ; and, moreover, it is hardy as a willow. Its colour is beautiful and chaste in lines or masses, being a warm lavender or mauve colour, something like *Viola cornuta*, but with a shade of crimson in it. Its habit is dense and spreading, upright in the middle of the plant, and lying down on the soil all round like the variegated *Alyssum*. Its duration of flowering is from May to December without fail, and gathering in profusion of bloom and colour to the last. Its management is extremely easy, but it must not be

left to itself, as herbaceous plants are generally. It is best raised from cuttings every year, the old plants being thrown away ; and with half the kind treatment given to Purple King Verbena, it will flower longer, and will rival or excel it in show throughout the season. I put in a batch of cuttings in fine soil in the open border about September, in close nursery lines, and every cutting strikes before winter. In March we transplant the young plants to where they are to remain ; or if that is not practicable until bedding time, we give them more room in the border, when they make nice plants by the middle of May.'—*The Gardener*, 1867, p. 437.

OXALIS CORNICULATA RUBRA — *Chocolate Foliage*, 4 inches.—A dwarf and almost hardy, chocolate-coloured, compact-growing plant, useful for various purposes, and very easily managed. It can either be raised from seed or by lifting a few plants in autumn, and propagating and managing it like a Verbena. If raised from seed, a few plants in pots should be placed on a sheet of paper or cloth, as it bursts its seed-pods suddenly and scatters the seed about, and it is not easily got in the usual way of seed-gathering. Sow in March, in a handglass or in gentle heat, and prick off into boxes when large enough to handle. It is not easily lost when once it is introduced, as the seeds come up thickly the following year even on the walks, but too late to be effective in time, so it is necessary to sow it under glass. Amateurs may keep a few roots of it anywhere free from frost, and in spring they can be divided into many plants. To plant a bed thinly with any silver-foliaged plant, such as Pelargoniums, and then cover the surface with this Oxalis, produces a very pleasing effect.

PYRETHRUMS— $1\frac{1}{2}$ *foot*.—The hardiness of these, and the great improvement in size and colour which has been effected in them, make them most useful plants, especially to those who have but a very limited accommodation for preserving tender plants. They are herbaceous plants, and are easily propagated by division in spring. In cold wet soils it is a good plan to pot up a few of them in autumn, and when they have grown a few inches in spring, to propagate by cuttings in gentle heat. A rich and rather heavy soil is most suitable for them. In poor, very dry soils, they are apt to flower very freely early in summer, and throw up fresh growth in the autumn, and in consequence get killed in winter. For autumn display, the best way is to cut them back in June; they then throw up fresh growths, and flower in autumn.

Album plenum, white.
 Atrococcineum, scarlet.
 Auguste Millez, pink.
 Candidum plenum, white.
 Hermann Steuger, rose.
 Lemoine, crimson.
 Madame Hubert, flesh.
 Monsieur Barral, crimson.

Mont Blanc, white.
 Rose Perfection, rose.
 Rubens, red.
 Striatum plenum, rosy lilac.
 Thomas Massart, peach.
 Tom Pouce, red.
 Themisteri, rosy red.

PETUNIAS—1 *foot*.—Although Petunias are not now so much used for beds, many of them are very useful, if not for beds, for planting against walls or singly in mixed borders. When in masses, in damp situations particularly, they are apt to damp off in patches in autumn. They flower best in moderately rich soil. For directions as to propagation and treatment, see *Heliotropes*.

Ashford Belle, purplish crimson.
 Countess of Ellesmere, crimson rose.
 Prince of Wales, crimson.

Shrubland Rose, delicate rose.

Undine, crimson.

Spitfire, dark plum, suffused with crimson; extra good.

PENTSTEMONS—1 to 2 *feet*.—Hybridizers have effected great improvement in these of late years, and they are very showy border flowers. They are very easily increased by cuttings in August and September under handglasses, the same way as recommended for Verbenas, and can be wintered where they are struck, and transplanted in April. To increase scarce varieties, the best way is to pot off when rooted, and place them in heat in spring, when they strike very freely in bottom heat. The side shoots, without bloom spikes, are best for cuttings. They require a rich soil, and, generally speaking, are quite hardy.

Admiral Dundas, rosy crimson.	Mrs Brooks, purple crimson.
Azurea elegans, nearly blue.	Neatness, rosy scarlet.
C. W. Cowan, light crimson.	Robert Parker, rosy crimson.
Dr. Hogg, scarlet.	Scarlet Gem, scarlet.
Fire King, scarlet.	Shirley Hibberd, salmon.
John Pow, red.	The Emperor, purplish crimson.
Miss Moinet, bluish mauve.	William Martin, striped crimson.
Mrs Bremner, creamy white.	William Thom, bluish purple.

PHLOX DRUMMONDII—*Various, 8 inches to 1 foot*.—Since such a variety of colour has been attained in Pelargoniums, this pretty plant and its varieties have not been so much grown. They are, nevertheless, very pretty, and deserving of a place in the garden. The seed should be sown the first week in March, in seed pans or boxes, in light rich soil. Place it in a temperature of 65°, and keep it regularly moist. As soon as the young plants can be conveniently handled, prick them off into boxes 2 inches apart each way. Keep them in a temperature

of 65° till they have begun to grow freely, then harden them off, and stop them when they grow to about 3 inches high. The stopping causes them to make lateral growths. Do not plant out till the end of May, and let them have good rich soil, and they will keep up a long succession of bloom. They must have a place where they are well exposed to the sun.

PHLOXES—2 to 3 feet.—For mixed flower borders and shrubberies, this genus of hardy perennial plants is very ornamental and effective. They are easily increased by division in the spring, and also by cuttings in August. They strike freely under a handglass in sandy soil, and every joint will root. In spring, transplant into deep, rather heavy, rich soil if possible, as the flowers and panicles are much finer than when grown on light dry soils; moreover, they last much longer in bloom. They should be renewed by lifting and dividing the roots, or by cuttings every second or third year; and when the stools are large, the weaker stems should be thinned out to give the others room.

Admiration, red, crimson centre.

Brilliant, rose.

Captain Speke, rosy crimson.

Comtesse de Turenne, purple, edged with white.

Countess of Breadalbane, carmine.

Countess of Home, white.

Dr. Lacroix, red.

Dr. Leroy, rosy crimson.

Duchess of Sutherland, white.

Edouard Andy, carmine.

Etoile de Nevilly, white, tinged with violet.

George Wynnes, rosy purple.

Hebe, lilac, rose eye.

Lucien Tisserand, bluish violet.

Madame Houlet, white, with crimson centre.

Madame Corbay, white, violet centre.
Monsieur Delamane, red.
Monsieur Donnand, violet, suffused with salmon.
Monsieur Alphonse Dufoy, red, shaded with violet.
Monsieur Mithvier, crimson, suffused with salmon.
Miss Ogilvie, white.
Premices Bonheur, white, with cerise centre.
Rêve d'Or, bright salmon.
Roi de Roses, rosy salmon.
Rosy Gems, rosy purple.
Souvenir des Fernes, white, purple centre.
Souvenir de Trianon, lilac rose.
William Elder, rosy purple.

PERILLA NANKINENSIS—1 to 2 feet, *Dark Chocolate*.—
 This annual derives its usefulness from the striking appearance of its dark chocolate-coloured foliage. It is most effective in lines, and can be kept to any required height by being pinched. The seed should be sown in pans or boxes about the middle of February in a temperature of 60°. When large enough to handle freely, it should be transplanted into boxes, as has been directed for various other things. If put in too thick, it draws, and becomes weakly. Two inches each way is sufficiently thick. The soil should not be over rich for either the seed or the young plants, as it has a tendency to grow very strong. It should be kept in heat till 4 to 6 inches high. It is tender, and must be gradually hardened off. It makes fibry compact roots and transplants well from the boxes. It should not be planted till the end of May, and in late places the beginning of June. Soil moderately rich.

For those who have not command of artificial heat in spring, this is not a very suitable plant, as it requires heat to get it to a suitable size for planting in proper time; still, it vegetates freely in the open borders in

summer, and it might be tried in a warm corner of a greenhouse, sowing it in March.

DIANTHUS BARBATUS (SWEET WILLIAM)—1 *foot*.—At one time great attention was given to this lovely plant, and there are fine collections of the auricula-flowered and self-coloured varieties, and few plants are more charming. But although, in hot seasons particularly, they do not last sufficiently long in bloom to make them serviceable in the parterre (unless they be removed when done blooming, and something else put in their place), they are, nevertheless, beautiful mixed-border flowers. The fine single varieties are preferred by some on account of their beautiful marking, but some of the double are very charming. To raise them from seed, this should be carefully selected from the most choice varieties. The end of May or beginning of June is a good time to sow for the following season's blooming. The seed should be sown outdoors in a light rich bed of soil, and when the young plants are 2 inches high, if they cannot be planted at once where they are to bloom, they should be pricked out into nursery beds, and transplanted in spring with good balls. Choice varieties must of course be propagated by cuttings, which is very readily done under handglasses, or even without such aid in a shady corner. They require a rather heavy rich soil to grow them to perfection.

SAPONARIA CALABRICA, *Pink*—S. CALABRICA ALBA, *White*, 6 to 9 *inches*.—This is a charming thing for little beds and edgings. Sow in gentle heat the beginning of April; when it can be conveniently handled, prick it off into boxes in moderately rich soil. Keep it in heat till it begins to grow freely, then harden off by degrees.

When planted, be careful to preserve some soil to the roots, and water well should the weather be dry. It thrives best in a sandy loam moderately enriched.

SALVIA PATENS—*Blue*, $1\frac{1}{2}$ to 2 feet.—This is perhaps the most lively and intense blue flowering plant we have; but in some soils, especially shallow sandy ones, it has the defect of dropping its flowers in dry weather, so that it is, under such circumstances, rather defective and ragged-looking. On better soils it is a desirable plant for large beds and mixed borders. In lines mixed with yellows or whites it looks exceedingly well. It can be raised from seed sown in heat early in February, or the tuberous roots can be lifted and wintered like Dahlias, and started in heat early in spring. It strikes freely from cuttings. It can also be preserved by covering the surface of the border with litter or spent bark after the tops are cut down, as referred to in the case of Dahlias, and hence is a useful plant for amateurs.

SALVIA FULGENS AND *FULGENS VARIEGATA*—*Scarlet*, 3 feet.—These are very useful for back rows and mixed borders. They are easily propagated by cuttings in August and September in a close cold frame; and in spring in the same way as *Heliotropes* or *Ageratums*. When large plants are required, the old ones can be lifted and potted, or put close together in deep boxes. They should be cut down to within 6 inches of the soil when potted. Whether in store cuttings, pots, or as old plants, they are easily wintered in any place which is dry, and where frost can be excluded. They are not particular as to soil, and thrive in any common garden soil moderately enriched.

SANTOLINA INCANA—6 inches to 1 foot.—A hardy plant, with silvery leaves, of neat and compact habit, and likely to become an acquisition for edgings in conjunction with dark-foliaged or flowering plants. Requires liberal culture, and is easily propagated, in the same way as recommended for Verbenas, in autumn; but September is early enough for it.

SCROPHULARIA NODOSA VARIEGATA—1½ foot, *Variegated Foliage*.—This is likewise a hardy herbaceous plant, and very useful for back lines or edgings to comparatively tall-growing plants. Can be increased by cuttings in August, and by division in spring. To make it produce fine variegated large leaves, it requires rich soil and pinching to keep it from flowering.

STACHYS LANATA—6 inches.—A hardy silvery-leaved plant, suitable for edgings and lines. Easily propagated in autumn or spring by division. Thrives in almost any sort of soil.

STOCKS—INTERMEDIATE VARIETIES—*White, Purple, and Scarlet*, 1 to 1½ foot.—Some of these are most gorgeous plants for beds and lines, such, for instance, as the East Lothian scarlet, purple, and white Intermediates; and being so easily managed, they cannot be too strongly recommended. All that is necessary is to sow in fine rich soil under a handglass on a south border about the end of March. Sow thinly, and allow them to remain till large enough to plant out permanently. About the middle of May they are 2 to 3 inches high, and transplant well. Throughout August, September, and October they flower magnificently, and are often fine in November. If required to flower earlier, sow in February in heat, and transplant into boxes or frames,

and plant out in the end of April. The singles should be lifted in September, and either potted or planted by the side of a south wall, where, with slight protection, they will winter and ripen their seed the following summer. Ten-week Stocks are not worth growing when these Intermediate varieties can be had true. They require a rich soil.

TRITOMA UVARIA GLAUDESCENS, 3 to 4 feet—T. GRANDIS, 4 to 6 feet, *shaded Orange tipped with delicate Green*.—This is one of the most gorgeous genus of hardy autumnal flowering plants. Few flowers can excel the stately large spikes of shaded orange tipped with delicate green. They are easily increased by division either in spring or autumn. When divided in autumn, they should be potted and wintered where severe frost does not reach them; and planted out in April, they make finer plants the first season than when divided in spring and not potted. But they do very well lifted and divided in April, after severe frosts are not likely to occur. Some have affirmed that *T. uvaria* can be had true from seed; but I have raised hundreds from seed, and found them as variable nearly as a Pansy—not one coming exactly like the parent. They are gorgeous for back lines and mixed borders, and the two named give a constant succession of bloom from August till Christmas. *T. grandis* commences to bloom when *T. uvaria* ceases. There are several varieties of *T. uvaria*, but *T. uvaria glaucescens* is the best.

They delight in rich, deep, well-manured soil. Leaf-mould or rotten dung should be liberally applied. To see them in greatest perfection, they must be allowed to grow into large stools, when their effect is grand.

TROPÆOLUMS—6 to 15 inches.—Some of these are very effective, and, such as *Cooperii*, cover the ground with a dense sheet of scarlet blooms that withstand wet weather exceedingly well. They can be raised from seed, but cannot be depended on for producing the same varieties. To prepare a store stock in autumn from which to propagate in spring, the cuttings should be put in towards the end of August. They root very freely in a gentle bottom heat; and by putting them in 8-inch pots filled with rich soil all but 2 inches of the top, which should consist of equal parts loam, leaf-mould, and sand sifted fine, it is not necessary to prick them off. Forced in heat in spring, they yield cuttings very fast, which can be struck like *Verbenas*. It is best to pot them off when rooted, for if shaken out at planting time they do not succeed so well. Those who have not means for spring propagation must of course strike the required number in autumn; but spring-struck plants do best. They all flower most freely in a poor sandy soil. *Cooperii* blooms freely under almost any circumstances. The following, except *Canariense*, *Brilliant*, and *Eclipse*, which are strong climbers, are best for beds:—

Brilliant, scarlet.

Canariense.

Cooperii, scarlet.

Compactum coccineum, scarlet.

Luteum improved, orange yellow and crimson spots.

Luteum, orange yellow, with crimson spots.

Eclipse, scarlet.

Elegans, orange scarlet.

King of Scarlets, scarlet.

King of Tom Thumbs, scarlet.

Rose Tom Thumb, rose.

TUSSILAGO FARFARA VARIEGATA—1 foot, *Variegated Foliage*.—Perfectly hardy, and increases itself like a

Nettle or Couch-grass, by running under ground. Indeed it is rather troublesome in spreading, and not easily eradicated once it gets a footing. It is very ornamental, and can be used with good effect in shady positions where other plants will not thrive. Looks very well as an edging to a clump of Ferns, or as a ground work to plants with graceful foliage. Likes deep rich ground.

TAGETES SIGNATA PUMILA—*Orange-yellow with Brown Spots, 1 foot.*—One of the most useful annuals. Has most wonderful powers of long-sustained and profuse flowering. Sow in the end of March in gentle heat. When 2 inches high, prick off about $1\frac{1}{2}$ inch each way in boxes. It vegetates in a warm greenhouse in April, and is very accommodating. It flowers best in a dry soil not over rich; and on hot soils, where *Calceolarias* are prone to fail, it is an excellent substitute. It withstands drought and rain equally well.

VERONICA SPECIOSA VARIEGATA, 1 to 2 feet—**V. PUMILA VARIEGATA, 1 foot.**—Among the prettiest of our silver-variegated plants, and not nearly so much grown as they should be. July and August is the best time to propagate in order to have nice stocky plants to plant out the following summer. Well-drained pots or pans may be filled with light sandy soil to within 3 inches of the top, then filled up with pure sand to receive the cuttings, which should be selected from the side-shoots, taking neither the strongest nor the weakest. They should be from 3 to 4 inches long. When inserted tolerably thick, as they are not subject to damp off, water well and place in bottom heat. When well rooted, pot-off singly in 3-inch pots, or three or four in 5-inch pots. Keep close for a short time, and then harden off till fully exposed.

They stand a few degrees of frost with impunity, and can be wintered in a cold pit where severe frost can be excluded.

VIOLA LUTEA, *Yellow*, 6 inches—VIOLA CORNUTA, *Violet Colour*, 6 to 8 inches.—These lovely dwarf Violas have risen rapidly into favour within the last few years, and they deserve a place in all flower-gardens. Being perfectly hardy, they are two of the very best things for those who have no convenience for raising tender plants. They are most easy to propagate, either by division of the roots or by cuttings. They strike freely in handglasses in light sandy soil in August and September; or when stock is scarce, they can be forced in spring and struck as directed for Verbenas. To have them in flower early in summer, autumn striking is the best; and for autumn blooming, spring-raised plants are preferable. They like a moist rich soil, and do not keep up a continuous bloom in dry gravelly soils. Indeed, to grow them to perfection, they must be treated similar to Pansies. They withstand any amount of rain. Some spurious varieties are in cultivation.

VIOLA TRICOLOR (PANSY)—BLUE KING, *Pale Blue*, 6 to 8 inches—YELLOW PRINCE, *Yellow*, 6 inches—PURPLE KING, *Purple*, 6 to 8 inches—WHITE QUEEN, *White*, 6 inches—IMPERIAL BLUE, *Purple*, 6 to 8 inches.—These have hitherto been chiefly cultivated for spring gardening, and too much cannot be said of them for that purpose. They are likewise most useful for summer and autumn, and, when properly managed, give a wonderful amount of flower. When wanted to bloom in summer and autumn, put in the cuttings under handglasses in October. They root through the winter, and

are nice plants, fit to be removed to where they are to bloom about the end of April. They should be lifted with balls, if possible, and kept well watered for a time. To flower well throughout the season, they require good deep ground, and a good manuring with rotten dung, and the seed-pod should be removed as soon as formed. These are invaluable Pansies for the amateur who cannot grow Yellow Calceolaria and Blue Lobelia or Purple Verbenas, and are so easily propagated, that if put in behind a north wall in light rich sandy soil, they root without any covering, and can be protected during very severe frost with a few evergreen branches or mats. For wet localities they are invaluable for summer and autumn display.

CHAPTER III.

WINTERING TENDER PLANTS IN COLD FRAMES—MANAGEMENT BEFORE PLANTING OUT—PREPARATION OF BEDS.

IN many cases cold pits and frames are all that can be commanded for wintering tender flower-garden plants. There is sometimes an outhouse, spare room, or bow-window that can be used as an auxiliary to a pit or frame. With such convenience, indifferent as it may be considered, and really is, it is astonishing how much can be accomplished by judicious management and earnestness of purpose.

In the construction of cold pits to be used for wintering such things as *Pelargoniums*, *Verbenas*, etc., the principal object to be secured is dryness, because damp is a far greater enemy to such plants, and one more difficult to combat, than frost. On this account, sinking below the ground-level should be avoided, unless the walls below ground be made perfectly water-tight by cement, and the bottom as thoroughly drained as possible. Indeed, it is a good plan either to pave or cement the bottom of the frame or pit to prevent water rising by capillary attraction, in which case there must be holes for the escape of all moisture that may collect inside; and the foundation of the inside should be of open rubble, with a drain to take the water away. Pits sunk a little into the ground, and constructed in this

way, are warmer than when raised above the ground-level. But I would rather have all above the level, and construct the walls hollow, enclosing a stratum of air, which is the best non-conductor.

One of the principal points necessary to success in wintering plants without the aid of fire-heat is that of preparing the plants in autumn early, and by the coolest system of propagation, as has already been recommended; but this is most especially applicable to the case of those who have no better convenience than cold frames or pits to winter their plants in. Early propagation allows of the plants being exposed to the open air, and enables them to become thereby robust; and their growth is thus ripened or solidified, so that they are not so susceptible of injury from either damp or cold. They of course become well rooted, which is another requisite to success.

When it becomes necessary to place the plants in the pits in order to be secure from autumn frosts, the lights should be drawn off by day when the weather is dry, not a drop of water should be allowed on the leaves, and they should be kept dry to the drooping point. This brings on a state of maturity before winter, calculated to stand a damp, cold, confined atmosphere, and the absence of light with the least possible injury. In placing the plants in the pit, do not overcrowd them. The pots should be washed clean; and where the leaves of such as *Pelargoniums* are crowded, thin out some of the largest of them.

Some dry loose material, such as hay or straw, should be in readiness as winter approaches, for covering up with in case of severe frost, and some of the same material should be packed round the sides of the pit. But

for this avoid anything likely to heat and prematurely excite the plants by a rise of temperature. When thick coverings over the glass become necessary, the material should, if possible, be perfectly dry, and shaken on as loosely as possible, as the more loosely it lies, the more air, the best non-conducting medium, it contains. If over the loose dry material some light covering, such as strong oiled calico, can be thrown, it will prevent cold winds from penetrating, and keep the hay or straw dry.

When it becomes necessary, from severe and continuous frost, to keep the glass covered up for a few weeks at a time, and when, perhaps, the thermometer inside the pit would indicate a few degrees of frost, great caution is necessary in uncovering and exposing the plants to light and air when the weather changes suddenly to a thaw. To uncover suddenly under such circumstances, exposes them to such a sudden reaction as will prove far more destructive than a degree or two of frost. The covering should not be touched till the temperature inside has risen above freezing a few degrees, and then it should not be removed all at once, but by degrees. Plants are living things, possessing all the susceptibilities of the most perfect and delicate organism, and are as subject to injury from sudden and extreme changes of light and heat as is the human frame. Many never think of this, or, if they do, are apt to forget it; and so soon as it thaws, off goes the covering, and the plants are injuriously affected even by the sudden flood of light, and if they have been slightly frozen they are ruptured by a too sudden thaw, and mould and rottenness follow. Frost should not be allowed to creep in if possible, but if it does, it should be allowed to creep out, not be suddenly expelled.

The great points, therefore, in wintering plants where fire-heat cannot be applied are—first, to keep the plants dry and in as complete a state of rest as possible all the latter part of autumn and winter. Secondly, when it becomes necessary to cover up for a length of time from severe frost, the covering material should be dry and loose. Thirdly, when thaw takes place, do not uncover at once, but gradually, and not till the thaw is complete.

All winter watering should be avoided beyond what is necessary to preserve life, and it is much better to have plants at the drooping point than the least over wet. This is equally applicable to plants wintered in spare rooms, and, indeed, even in greenhouses where fire-heat can be used. It is astonishing how little water is sufficient in winter for flower-garden plants, and especially Pelargoniums, which are often ruined by late propagation and over-watering in winter. Variegated Pelargonium cuttings in 8-inch pots on shelves often go without water for weeks at a time, and look splendid, although so dry that some would think they would be starved.

Management of Plants before being Planted Out.—That all flower-garden plants, whether propagated in autumn or spring, should be well hardened off, in order to their wellbeing after being planted, is a point of management which will no doubt be assented to by the merest tyro. I am, however, persuaded that starvation is often substituted for 'hardening off.' It is not a very uncommon thing to meet with Verbenas, Calceolarias, and Pelargoniums, etc., in small pots exposed to the full blaze of sun, and all the influence of cold drying winds in

April and May, with the view of making them hardy. Under such treatment the plants become stunted and wiry, and when planted out in such a condition they stand still a long time before they commence to grow freely; the tissues of the plants are so dried up and contracted that midsummer passes before they make a start into healthy growth.

If, instead of exposing small pots to the full sun and wind for weeks, they are shaded from the sun during the hottest part of the day, or else turned out of their pots into beds of light rich soil, they present a very different appearance by the middle or end of May. Where the accommodation for plants is not far removed from the flower-garden, and where that accommodation is limited, I would suggest that those plants which have been recommended to be potted off when rooted, should, as soon as they have filled their small pots with roots, be turned out of these, and planted in frames or temporary pits in soil composed of equal parts loam and leaf-mould with a little sand.

There are great objections to matted balls in tiny pots; and when plants are potted into pots that are less than 3 inches wide and the same in depth, the turning-out system that has been recommended above obviates the evil arising from small pots, and at the same time saves trouble in watering, and produces far finer plants. Besides all this, it admits of the necessary amount of exposure for properly hardening off, without stinting and starving the plants. But even under such more favourable circumstances they should never be exposed to cold cutting winds, even though accompanied with bright sunshine, the effect of which is, as already referred to, to dry up and stunt the young plants. It

is much better during such weather to keep the lights on, merely giving air to prevent the opposite extreme. A good plan, in the case of those who have to turn plants from under the protection of glass during the cold winds of spring, is to stretch some strong calico tightly about a foot above the plants, and let it remain so constantly. The plants get a fair share of light through such a covering, while they are protected from drying winds, and, if tightly stretched, the calico throws off rains also. Any additional night covering required can be applied over it.

In the directions for propagating, it has been recommended to prick off the great majority of plants from the cutting and seedling pots either into frames or boxes. This system calls for much less labour and room at first; and in managing the plants up to the time of planting, much less labour is required to produce strong, healthy plants. Where the accommodation is limited, and at a distance from the flower-garden, the moveable boxes afford many advantages in spring management, and when to be finally moved to the flower-garden, it can be done speedily, and with no injury to the plants.

Throughout the month of April and early part of May, plants managed in this way usually make rapid progress, and an evil quite the opposite of stunting must be guarded against—namely, that of the stock becoming drawn and weakly. To prevent this, they must be freely exposed during fine weather; and when the lights are put on for the night, air should be left on. The soil should be kept in a medium condition of moisture: just enough of water to keep the plants steadily growing and healthy should be given. The quick-growing things, such as *Verbenas*, *Calceolarias*, etc., should be frequently

looked over and stopped—not allowed first to make long straggling growths, and then pinched severely back, but be regularly attended to, and have the mere points of the growths pinched off. Every sign of green-fly must be checked by the usual method of fumigating with tobacco smoke; for if once this insect is allowed to overrun the plants, they rarely ever thrive so well afterwards; and before planting out, all such plants as *Calceolarias*, *Verbenas*, etc., that are subject to green-fly, should be fumigated, if there are the least signs of the fly to be seen.

When it becomes necessary to move plants from the protection of glass to temporary places, where all the protection they can receive is that of being covered with mats or canvas, they should be well established and hardened off previously. The position chosen for such temporary protection should not be shaded, although well sheltered. If placed in a position where they get no sun for weeks before being planted out, they become tender and weakly; and when ultimately planted out in the full sun, they invariably get scorched, and lose their leaves, and are sadly checked. This is more especially applicable to *Pelargoniums* of the variegated class, but to all it is very injurious.

Flower Beds and Borders.—It is considered a settled point with experienced flower-gardeners, that the majority of the plants now used for long-continued masses of bloom are as exhausting to the soil, and require to have as good a foundation laid for their culture, as many or most of our vegetables; and although, in treating of the propagation of the various plants recommended, reference has been made to the soil that suits them

best, I think it a matter of very great importance that the principles of good cultivation, in so far as the preparation of the beds is concerned, should be specially noticed. What has been already stated in connection with individual plants, bears more, and sufficiently as a general rule, on the application of manure, and the nature of the soil, than on its preparation.

There are good reasons for fearing that the miserable appearance of many a villa and cottage flower-plot owes its origin to the idea that our present flower-garden plants do not require careful cultivation, such as would be expected to produce good crops of vegetables; consequently I wish to give prominence to the fact, that in order to produce fine healthy plants and a long-sustained array of bloom in the case of the great majority of the plants used, it is indispensably necessary that the beds be well drained, deeply worked, and well manured. To this rule there are of course exceptions in the case of some plants, concerning which I have, in treating of them individually, indicated a contrary course of treatment, in the case of manuring especially.

Few crops are more exhausting to soil than masses of *Verbenas*, *Heliotropes*, *Calceolarias*, &c., and the unsatisfactory appearance which these frequently present is as often referable to the want of liberal treatment as to anything else. Jethro Tull was not far from the truth when he propounded that deep draining and deep cultivation were all that was needed to produce good crops; certainly such conditions lie at the foundation of all good culture, and are nowhere more applicable than in the flower-garden. An accumulation of water about a bed of flowers is productive of evils that will thwart the efforts of good management in all other respects: it

will keep down the temperature of the soil, prevent the natural action of the atmosphere, and lessen the chances of getting the soil pulverised and sweetened. Every flower-bed that is wet should therefore be well drained, as the first step in successful flower-gardening.

As to deep cultivation, the benefits derivable from it are so many that it would be difficult to enumerate them all. It gives a greater degree of openness to the soil, so that the roots can penetrate it more easily, and in dry seasons go down where the soil is more moist, and escape to a greater extent the evils of drought. In wet seasons the superabundant water escapes more freely to the drains or sub-soil. Many other benefits might be referred to, but these are sufficient to show that deep cultivation is of much importance in flower-beds and borders. I make it a rule to trench, every other year, every bed under my care. This is done in winter, and a rough surface left exposed to frosts; and the beds are forked over and thoroughly pulverised before planting-time.

The extent to which manure must be applied must be regulated by the nature of the soil, and dryness or wetness generally of the locality. Where the soil is naturally shallow, or light, or sandy, it is greatly improved by having a quantity of heavy loamy soil incorporated with it. The best manure for sandy soil is cow dung which has been in heap for at least twelve months, and has lost its rankness; the next best is old well-rotted hot-bed manure—that is, stable dung well decayed; but for heavy loamy soils well-decayed leaf-mould is preferable. These manures should be applied when the beds are trenched in the course of the winter, and incorporated well with the staple. All rank or partially decomposed manure should be avoided; and

when well-decomposed manure cannot be had, spread it over the surface of the beds, and let it lie exposed to the air before digging or trenching it into the soil. The flower-gardener who has a deep, rather light loamy soil that he can trench from 2 to 3 feet deep, and a dry subsoil, has a great advantage over others who have either a shallow poor soil, or one that is wet and clayey. It is scarcely credible to those who have not seen it how gorgeously most plants grow and bloom in deep light loam, resting on a dry bottom, which should be the standard to be guided by.

Owners of small gardens particularly have great disadvantages to contend with where their soil is naturally bad. Generally they cannot easily get their few flower-beds either entirely remade, or ameliorated where the soil cannot be wholly replaced. Clay is more effectually improved by burning the subsoil, and mixing it with the best of the surface soil, than by any other means. The method of doing this is detailed in a subsequent chapter. Road grit or light sandy soil added to it will also improve it; and when soil is sandy and poor, the subsoil should be removed, and heavier soil mixed with the best of the natural soil. It need scarcely be said that, when the soil is naturally unsuitable, the most effectual way of remedying the evil is to entirely remove it to the depth of 20 inches or 2 feet, and replace with two parts fresh loam and one part decomposed leaves or leaf-mould. Where the rainfall is great, and many things, particularly Pelargoniums, grow too much to leaf, the soil should be raised more above the ground-level, and of course manure should be more sparingly applied generally.

CHAPTER IV.

ORNAMENTAL FOLIAGED PLANTS.

*Plants suitable for Planting as Single Specimens, and for Planting in Groups in sheltered places in the Summer and Autumn Flower-Garden, and that can be mostly wintered in a Greenhouse:—*The whole of these thrive well in a soil composed of equal parts turfy loam, with a fourth part peat, a fourth part leaf-mould, and about a sixth part of the whole of sand:—

Acacia lophantha.	v Agave medio-lutea.
s H Acanthus Lusitanicus.	Agave dasyliroides.
Agnostis sinuata.	v Agave striata.
Aralia dactylifolia.	Aloe glauca.
Aralia reticulata.	Bambusa nigra.
Aralia heteromorpha.	v H Bambusa Fortunei foliis niveis
Aralia papyrifera.	vittatis.
Aralia Sieboldii.	Bambusa viridis glaucescens.
v Aralia Sieboldii variegata.	Beaucarnea recurvata.
x Areca sapida.	Beaucarnea glauca.
H Arundinaria falcata.	x Baconia caudata.
H Arundo conspicua.	Chamæpeuce diacantha.
H Arundo donax.	Chamærops excelsa.
v Arundo donax variegata.	Chamærops Fortunei.
Araucaria excelsa.	Chamærops humilis.
Araucaria Cunninghamii.	Chamærops palmetto.
Araucaria Cookii.	Cycas revoluta.
Araucaria Rulei.	Centaurea argentea.
Aspidistra lurida variegata.	Centaurea gymnocarpa.
Agave Americana.	Centaurea Ragusina.
v Agave Americana variegata.	Clethra arborea.

- v *Clethra arborea variegata*.
 s *Cineraria platanifolia*.
 v *Coronilla glauca variegata*.
Corypha Australis.
Canna Annei.
Canna erecta hybrida.
 s *Canna rubra superbissima*.
Canna géant.
Canna robusta.
Canna Sellowii.
Canna discolor.
Canna Expansa.
Canna metallica.
Canna nigricans.
Canna rubra perfecta.
Canna rubricaulis.
Canna zebrina coccinea.
Canna Warczewiezii.
Canna major.
Cordylina indivisa.
Cordylina longifolia.
Datura arborea.
Dracæna Australis.
Dracæna Boerhavii.
Dracæna draco.
Dracæna angustifolia.
Dasyllirion glaucum.
Datisca cannabina.
Doryanthes excelsa.
Echeveria metallica.
 v *Eurya Japonica latifolia variegata*.
 v *Farfugium grande*.
Eucalyptus globulus.
 x *Ferdinandia eminens*.
Fourcroya longæva.
 x *Ficus elastica*.
Gynierium argnteeum.
Grevillea robusta.
Griselinia macrophylla.
Gunnera scabra.
 v H *Iris foetidissima variegata*.
 x *Latania Borbonica*.
 x *Latania Jenkinsiana*.
 s x *Nicotiana wigandioides*.
 H *Phormium tenax* (New Zealand flax).
 v *Phormium tenax variegatum*.
Polymnia grandis.
Phoenix dactylifera.
 v x *Panicum plicatum*.
 x *Ricinus albidus magnificus*.
 x *Ricinus lividus*.
 x *Ricinus Obermanii*.
 x *Ricinus sanguineus*.
Ricinus viridis.
 v x *Rhapis flabelliformis*.
 x *Rhopala corcovadensis*.
Seaforthia elegans.
 s *Senecio Ghiesbreghtii*.
Sempervivum aizoides variegatum.
 v *Salvia argentea variegata*.
 s *Solanum macrophyllum*.
Solanum marginatum.
Solanum robustum.
Solanum pyracanthum.
Solanum verbascifolium.
Yucca aloifolia.
 v *Yucca aloifolia variegata*.
 H *Yucca aloifolia cornuta* (con-cava).
 H *Yucca gloriosa*.
 H *Yucca gloriosa glaucescens*.
 v *Yucca filamentosa variegata*.
Yucca filifera.
 H *Yucca recurva pendula*.
Yucca albo-spica.
 H *Yucca flaccida*.
 v *Yucca quadricolor*.
 x *Wigandia Caraccasana*.
 x *Wigandia Wygenii*.
Vitis heterophylla.

Those marked H are hardy; X, require the temperature of an intermediate house; and those marked v have variegated foliage; s, those that are easily raised from seed. Of course the cultivation of such plants to any great extent is not practicable, except where there is a considerable amount of glass, and not at all in the case of amateurs who may have only one small vinery or greenhouse, or even both. Yet many of them can be raised annually from seeds, or be propagated by cuttings in spring from a forced plant of each variety. Among those which are very effective, and that can be got up in this way, are Cannas and Ricinus. The former of these, if sown early in February, and pushed on in heat, make large plants in 6-inch pots before the beginning of June. The same applies to the Ricinus, which can also be sown in autumn, and, wintered in a small state in a warm greenhouse, makes fine plants the following season. The roots of Cannas can be kept over the winter as easily as potatoes, and with as little trouble, by lifting and packing them in moderately dry soil in any shed or outhouse where frost cannot reach them. In spring they should be started and grown on, much like a Dahlia. The Cannas are available in this way in the case of those who may not have the best nor the most ample resources. Then there are such effective things as Nicotianas, Wigandia Caraccasana, Polymnia grandis, Ferdinandia eminens, Senecio Ghiesbreghtii, Solanums, etc., which can either be raised from seeds annually, or propagated from an old plant or two where they can be afforded room, and where a strong top and bottom heat can be commanded to propagate with in early spring. Managed in this way, and grown on in heat till the middle or end of May, they make stout

plants, which, in good rich soil and sheltered situations, grow into large specimens the same season. These few varieties, in conjunction with hardy Yuccas and the other hardy plants included in the foregoing list, would help to give variety and an interesting feature in every garden where the climate can be termed moderate, and the shelter is sufficient to protect them from winds.

As will appear from the directions given for arranging these plants in beds and borders, we are very partial to planting them as panel and centre plants in beds and long borders, because it is then that their character and beauty are best seen, and they give relief to heavy masses of colour.

It must not, however, be supposed that, although nearly all the plants we have enumerated are as hardy as the general run of summer bedding plants, this order of gardening can be carried out with success anywhere, except where they are well sheltered from high winds. This of course applies to the quick-growing soft-wood and large-leaved plants; and we would warn those whose gardens are not favoured with sheltering boundaries, that all their attempts will be labour lost; for although, when fresh and healthy, such plants are very effective, they are most hideous when torn and tattered with the wind. In all exposed places such things as Yuccas, Aloes, that are stiff and not affected by winds, and such things as *Dracæna Australis*, *D. cordylina*, and *D. draco*, etc., the leaves of which yield, but do not tear nor break, should be chosen. *Ficus elastica* we find to stand winds very well, its leathery foliage fitting it for rough weather. Where the flower-garden proper is too exposed to use the more easily injured plants, then sheltered and partially shaded nooks in recesses by the

sides of pleasure-ground walks can be selected as spots suitable for groups, or single specimens, as the positions suggest. These will give variety and interest to such resorts, and contrast well with the surrounding vegetation.

In all cases it is necessary, in preparing such beds, to make certain of thorough drainage; for though the quick-growing, soft-wooded varieties require an abundant supply of water to cause them to expand their foliage well, they are impatient of stagnant moisture, which sours the soil and keeps it cold. A few barrowfuls of broken stones placed loosely in the bottoms of the beds, and blinded over with smaller ones to keep the soil from mixing with them, is a method that should be adopted in cold clayey soils. A good proportion of the soil in the beds should consist of half-decayed stable manure and leaves, mixing in some turfy loam, or where such cannot be had, ordinary garden soil, to give it stamina. The beds should be well elevated above the surrounding surface, finishing them in a convex shape, which presents the greatest surface of bed to the sun, and gives a surface for grouping plants that are used for gracefulness of outline in the most telling way. Our own experience, and that of others in Scotland, justifies us in saying that it is shelter from cutting winds, an open rich soil, and a good supply of water, that are the chief conditions of success in the culture of such plants, and that bottom heat is of less consequence if these conditions be secured. In the summer of 1867 we planted some *Solanums*, etc., on the north side of a yew hedge, in some peaty soil, without any preparation whatever; and although the sun never touched them the whole season, they made growths

which we were not prepared to see under such circumstances.

Plants that are, strictly speaking, warm stove plants, are purposely excluded from the list given, because the wintering and use of such plants must of necessity be limited as compared with those which can be wintered in a greenhouse. We are, however, convinced that some of our stove plants, such as *Dracænas*, *Crotons*, *Marantas*, *Caladiums*, etc., would succeed in the more favourable parts of Great Britain better than is generally supposed, provided the shelter be complete, and the plants properly hardened off before being turned out. Stove plants succeed best when plunged in their pots, so that they can be lifted and housed in autumn without receiving a severe check. There are many such plants in our stoves which, when they become too large for the accommodation, might, instead of being thrown away, be made to play a good part in cozy nooks for a summer before being doomed to the rubbish-heap. Such plants as these, as well as greenhouse *Yuccas*, *Dracænas*, *Palms*, etc., when well rooted, should receive a shift early in spring, so that their pots may be tolerably well filled with roots by the 1st of June, and able on that account to resist high winds and other vicissitudes of weather better than if shifted just when plunged outdoors. In plunging them, a vacuum should be secured under each pot, so that water may get freely away when applied. But in this matter it is best to plunge in light, open, warm soil, in which there is less chance of injury from flooding rains.

Where there is not convenience for the home propagation and culture of the soft-wooded and quick-growing varieties, that require stove heat to propagate and push them on in spring, such can now be purchased very

cheaply, and are found priced in leading nurserymen's catalogues ; so that a few of these, in conjunction with hardy and greenhouse plants, are within the reach and enjoyment of a great many ; and we have proved these plants to be quite as hardy as the *Pelargonium*. Indeed, in very dry soils *Cannas* will stand the winter left in the ground, and protected from frost ; but they are safest lifted and stored. In wintering such plants in a greenhouse, they should be very cautiously supplied with water at the dead of the year ; just enough should be given to prevent their flagging, but no more. The drier they are kept to a certain point, the more likely they are to winter successfully. When growing quickly in heat in spring, they delight in rich soil and a plentiful supply of water.

Many of the plants that have been recommended for subtropical gardening cannot be regarded as in themselves beautiful, more particularly some of the soft-wooded things, such as *Nicotianas* ; and preference should be given to plants with graceful outlines, such as the greenhouse *Dracænas*, and some of the *Yuccas* and *Ferns* which we have enumerated. What, for instance, can rival in gracefulness of outline and habit large plants of *Dracænas*, such as *D. Australis*, *D. draco*, and *D. cordyline*, *Yucca recurva pendula*, and others ? The *Arundos* are beautiful and hardy subjects, and far before many of the common-looking soft-wooded ones. It is not necessary to praise the Tree *Ferns*, for one plant of them is preferable to a score of the soft and easily injured leaved plants. However, such aristocratic plants as these require a goodly amount of room to winter them in, and turn them out in fresh condition in spring ; and hence the

desirableness of a selection of commoner and quicker growing things that can be raised yearly from seeds or cuttings.

It was in 1859 that I made the first attempt at breaking up flat surfaces of colour by mixing in bolder growing plants. The materials at command were of the humblest description, and consisted of small plants of Holly and Coniferæ. The whole of one group of beds was planted with Gladioli, about $2\frac{1}{2}$ feet apart, and while in bloom the effect was considered remarkably beautiful; and even after the flower-spikes were cut away, the sedge-like leaves gave a decided feature to the beds.

In the remarks which we have made regarding the adaptability of many plants for outdoor decoration over a wider part of the kingdom than has hitherto been supposed practicable, and also regarding the preparation of the soil and bottom heat, we are borne out by a communication received from Mr Sorely, gardener to John Russell, Esq., Mayfield, near Falkirk, where, for the last three or four years, many tender plants have been planted and plunged outdoors for a few months in summer. The district where this liberal patron of horticulture, aided by his enthusiastic gardener, has carried out with fair success this style of gardening, is one where the climate is so unfavourable to the general bulk of flowering plants, that few of them are planted because they do not yield a sufficient amount of bloom to make them effective; in consequence of this, fine foliages—such as is produced by gold and silver Pelargoniums and other plants—are used for ribbon and panel borders. On account of this, I am the more anxious to relate the manner in which such plants as we are now discussing

have behaved in by no means a favourable climate ; and I will consequently quote from the communication with which I have been kindly furnished from Mayfield :—

‘It is now three or four years since we began to plant what are now known by the designation of subtropical plants in the grounds at Mayfield. These noble-leaved plants and graceful forms appear to be the missing link in flower-gardens ; and although it will take time to become general, it has been proved here that there is no necessity for so much preparation in the matter of soil and bottom heat as we read of as being necessary. Our chief enemy is wind, not the want of bottom heat. A great number of the plants used require a deal of water, and artificial watering cools the soil beyond its ordinary temperature. The plan we have adopted to reduce the watering to a minimum, and husband the moisture in the ground, is to make up the compost in which the plants are plunged or planted in of littery horse dung, open peat, and half-rotten leaves, surfacing the whole with an inch or two of common soil. The beds are formed in a convex form ; and this presents more surface to the sun, and throws off flooding rains, which prevail in this district.

‘The more prominent plants we have used are Agaves, plain and variegated, in large force, which stand from May till October ; *Aralia papyrifera*, *A. Sieboldii*, *A. Brownii*, and *A. Microphylla*. These have been plunged in pits filled with peat, and they did remarkably well. *Caladium esculentum* grows to a noble showy-leaved plant, and draws the attention of every visitor. All the Australian plants of *Dracænas* grow faster outdoors than under glass. We have also tried the stove varieties, such as *D. ferrea*, *D. terminalis*, and even they have

done surprisingly well. Variegated Maize, I must admit, has fairly beat us for the last two seasons. We planted it out, mixed with *Dracænas*—good strong plants, from 1 to 3 feet when planted,—and the effect was most charming; but it will not stand wind, and consequently got so unsightly that it had to be removed.’ Our own experience proves, that to grow this plant it requires a place where winds cannot reach it, or it will never succeed. ‘*Ficus elastica* and *F. Cooperii*, which contrast well with each other, have succeeded well. *Chamærops Fortunei* *Seaforthia elegans*, and all the Australian Palms that we have tried, do remarkably well, and are very effective. *Dicksonia Antarctica* has withstood eight degrees of frost uninjured. *Phormium tenax variegatum* has a bright future before it in this style of gardening. The New Japanese *Euonymus*, both the gold and silver variegated, are perfectly beautiful, and will stand our ordinary winters. *Eurya Japonica latifolia variegata* is a great beauty. The new seedling *Aucubas* are very striking, and make leaves here a foot long by 6 inches across, and some of them are beautifully serrated. I must not forget to name a sport from the old *Aucuba*—*A. latifolia maculata*. It puts the brightest-coloured *Croton* quite out of court, but it requires to be grown in a pot or tub, and kept under glass in winter, with plenty of subdued light, as, if it gets much sun, it is not so fine. *Coleus Verschafeltii* does ordinarily well. The showy *Begonia rex* and its varieties I have planted out in quantity, and in a shady place it made fresh leaves freely. It is a great pity that *Musa Cavendishii* is so easily injured with the wind: it makes leaves freely outdoors, but the wind tears them very much. The green *Cyperus* grows like grass planted out, and is very ornamental.’

These, with Cannas, are the bulk of the more tender things which, nearly 500 miles north from London, have succeeded, as before described, in a climate where Pelargoniums are very little planted for their blooms. Besides these, Yuccas and other graceful and more hardy plants have been used with good effect. Mr. Sorely further states:—‘All these have succeeded beyond our expectations, and would have done much better in 1867 (the coldest summer for forty years in Scotland), had it not been for eight or ten days of almost winter weather we had in July, with the thermometer ranging from 45° down to freezing at night.’ Surely this record, which came to hand after we had written of our own experience in so adverse a season as 1867, ought to encourage a larger adoption of this style of gardening. We do not advise the use of many of the coarse rhubarb-looking plants recommended by some, but rather such plants as the greenhouse Palms, Yuccas, and Dracænas, a score of plants of the perfectly hardy *Yucca recurva pendula*, than which few plants are more graceful, as many *Yucca aloifolia variegata*, and some few Tree Ferns, *Arundo donax variegata*, and *A. conspicua*, to say nothing of the many others: these alone would add a charming feature to outdoor gardening.

Ferns suitable for single specimens or groups, in sheltered places in summer and autumn, and that can be wintered in a greenhouse.

Alsophila Australis.
Alsophila excelsa.
Cyathea dealbata.
Cyathea medullaris.
Cyathea Smithii.
Dicksonia Antarctica.

Dicksonia squarrosa.
Todea barbara.
Lomaria gibba.
Lomaria zamiaefolia.
Neottopteris Australasica.

These noble Ferns can be placed outdoors in summer; and in partially shaded and sheltered places, what can look more beautiful? The Dicksonias, in particular, are most useful, and when from 3 to 4 feet high, make splendid objects in the centres of beds of flowers; or as panel plants in long borders, alternating with such plants as *Yucca aloifolia variegata*, they are very effective. Of course such aristocratic decoration presupposes ample resources under glass. A very good imitation can be carried out by the amateur who does not possess much glass, though of course in a much more diminutive way. Let such prepare pits of soil in their borders or beds, by removing the natural soil, and replacing it with a mixture of rotten leaves, road grit, and a little common garden soil, and plant the common shield Fern *Lastræa*, of which the varieties *filix-mas* and the Lady Ferns are the most suitable. These, when well cultivated in this way, remain in full verdure till the beginning of winter, and are very elegant. These, alternating in borders of flowers with the hardy and very elegant *Yucca recurva pendula*, produce a very pretty effect; and such plants are within the reach of all. Amateurs who have plenty of time can even produce a very good imitation of the Tree Ferns by scooping out the stem of a rustic piece of tree, leaving the bark on, and filling up with a rich vegetable soil, and planting these *Lastræas*; or a large drain pipe set on end, and made rough and rustic-looking with a little Roman cement and shelly gravel, can be substituted for the tree. With good strong stools of *Lastræas* planted in these and kept well watered, a very good imitation of Tree Ferns can be made. The *Lastræas* are most suitable for this purpose; and all of the following Ferns, which are perfectly hardy in most

localities, are suitable for planting in the centres of beds of flowers :—

- Athyrium filix-fœmina corymbiferum*, 1½ foot.
- Athyrium filix-fœmina Fieldiæ*, 2 feet.
- Athyrium filix-fœmina thysanotum*, 2 feet.
- Lastrea filix-mas*, 2½ feet.
- Lastrea filix-mas cristata*, 2 to 3 feet.
- Lastrea filix-mas cristata angustata*, 2 to 3 feet.
- Lastrea filix-mas cristata polydactyla*, 2 to 3 feet.
- Lastrea marginalis*, 1½ to 2 feet.
- Lastrea thelypteris*, 1½ foot.
- Lastrea dilatata*, 1 foot.
- Osmunda regalis* (Royal Fern), 3 to 4 feet.
- Osmunda regalis cristata*, 2 to 4 feet.
- Polystichum angulare proliferum*, 1 to 2 feet.
- Polystichum angulare proliferum Woolastonii*, 2 to 2½ feet.
- Polystichum angulare polydactylum*, 2 to 3 feet.
- Scolopendrium vulgare crispum* (Hart's Tongue), (requires shade), 1 foot.

FLOWER-GARDENING IN FRANCE.—Having given sub-tropical experience in Scotland, we now append a communication from our friend Mr Knight of Ponchartrain, France, who is well acquainted with the French style of decoration, under much more favourable circumstances as to climate than is enjoyed in Scotland.

‘One prominent feature in the flower-gardens of France, and which is so profusely illustrated in the public thoroughfares and squares of Paris, is the immense quantity of handsome and beautiful-leaved plants used in giving effect to flowers in beds and borders during the summer and autumn months. Nothing tends to give a greater brilliancy to their dwarfer associates than do these plants when judiciously arranged. The extreme aptitude of the French gardener in the propagation and getting up of stock of these plants; the systematic manner they have in storing away those

requiring protection for the winter, merely giving sufficient heat to preserve life without loss, and thereby avoiding a winter development of sickly foliage; the care taken in their preparation in spring not to have their roots entangled into a hard ball previous to planting; and, above all, the having proper soil prepared for their reception in their outdoor quarters,—are the chief causes why he excels us in producing a sub-tropical effect, so desirable in our gardens and pleasure-grounds.

‘The taste for these fine-foliaged plants, no doubt, first took root in Northern Europe, where, from the absence of outdoor evergreens, caused by the severity of the weather during the long winter months, the wealthy nobles had recourse to employing numbers of the more persistent foliaged species for the decoration of their halls and staircases. Many of these nobles, like Prince Demidoff, introduced and encouraged this taste in Paris; and ultimately it spread to such an extent that the Parisians now not only employ them in their hotels, but the beauty of their gardens is greatly enhanced by a liberal use of them in combination with the endless variety of flowering plants known at the present day.

‘The French gardener is not content with having one or two variegated *Yuccas*, but he must have at least six or eight, and the way he disposes of them would be something in this manner:—Four of them would occupy vases with a flowering plant, such as the creeping *Tropæolum*, planted around the edges, to droop down over the side of the vase; four would be accommodated with a bed in company with a hardier associate, *Yucca recurva pendula*, and the ground between covered with blue *Lobelia* and variegated *Pelargonium*. The same vases and the same bed another year would probably be filled

with *Corypha Australis* and variegated *Aralia Sieboldii*. The graceful-leaved *Polymnia grandis*, associated with the variegated *Arundo donax* in a large bed 12 or 14 feet in diameter, with a carpet of *Cerastium tomentosum* and *Gazania splendens* mixed, and edged with *Iresine Herbstii*, forms a beautiful combination: and so does *Canna Annei* with *Ficus elastica* and a carpet of scarlet *Verbena*; *Cyperus papyrus*, alternated with one-stemmed *Coleus Verschaffeltii*, and the ground covered with golden-leaved *Pelargoniums*; *Wigandia Caraccasana* planted in clumps of pyramidal variegated *Hollies*, with a carpet of purple *Verbena* and a bordering of pink *Pelargonium*; *Aralia papyrifera*, ground covered with rose *Pelargonium*, and a bordering of *Heliotrope* and *Centaurea Ragusina*. All of these combinations make handsome beds on gently undulating grass lawns with the surrounding vegetation healthy and abundant.

‘The red-stemmed *Ricinus*, *Musa ensete*, *Dracæna indivisa*, *D. Australis*, *Eucalyptus globulus*, *Nicotiana Wigandioides*, *Gunnera manicata*, and dozens of others, feel quite at home in spots where holes had been dug a yard square and three yards apart at the three points of the triangle, and filled with rich soil in favourable and well-chosen nooks. Planted singly or in fives, according to the position of the ground, they are equally effective. Single specimens of Palms, without depriving them of their pots, plunged in small beds of peat or leaf-mould, being a medium warmer than other soils, of such rapid-growing and easily-obtainable sorts as the following, have a noble appearance:—*Seaforthia robusta*, *Latania Borbonica*, *Phœnix pumila*, *Phœnix leonensis*, *Euterpe edulis*, *Corypha Australis*, *Cocos Australis*, *Chamærops excelsa*, *C. Fortunei*, *C. stauracantha*; while many

of the species of *Bonapartea*, *Agave*, and a few of the *Cycads*, are also used with excellent effect for this purpose, and also for vases. At first these plants look anything but happy when taken from the hothouse to the parterre; but after a few years they get quite initiated, and make fine handsome foliage when their wants have been well attended to in regard to soil, planting, and watering. Where the soil is not naturally good, great care is taken to renew it entirely to the depth of 2 feet with a well-mixed compost, and where the subsoil is retentive of moisture, a layer of debris is placed in the bottom of the bed. In addition to this, a quantity of half-rotten leaves and stable-litter is dug in annually where such plants as *Wigandias*, *Cannas*, *Polymnias*, *Caladiums*, *Ricinuses*, *Musas*, *Gunneras*, and any having soft and rapidly-made foliage, are intended to be planted. All the persistent foliage plants, such as *Yuccas*, *Palms*, *Dracænas*, *Agaves*, *Cycads*, and others, are accommodated with peat, adding, as in the other case, leaf-soil and half-rotten stable-litter yearly, and in this compost they luxuriate with extraordinary vigour. They are generally confined to their pots or tubs, and the roots are only allowed to escape by the top and openings at the sides or bottom. Although these plants are commonly cultivated indoors in loamy soil, yet it is found here not to answer for outdoor culture, simply because it is not warm enough for their roots. A light or peaty soil, by reason of its warmer tendency, is thus preferred to a loamy one. In all cases the beds are elevated, and in many instances most ridiculously, as those at the *Champs Elysées*; but this is considered a necessary evil, in order to hide the singing restaurants, so plentiful in these gardens. In planting, particular

attention is paid to forming little basins around each plant: the reason is obvious, and is found indispensable to those that have happened to be planted with hard balls, as giving facility to watering directly at the roots; and moreover, in these exceptional cases, great care is exercised in soaking thoroughly for several hours in basins of water those having the least look of dryness.

‘No expense is spared in establishing a regular and liberal supply of water, for without this, labour would be in vain. A plentiful gravitating system of watering, therefore, is in general use wherever these plants are seen; and by this means water is given copiously to roots and leaves, night and morning, in hot weather, and more abundantly to the soft or fast-growing species. In lifting after the first slight frost in October, the fast-growing kinds are entirely denuded of their leaves and the greater portion of their roots, and potted in any light warm soil. A little heat is generally provided to start a few roots into activity in a house to themselves, where they can be kept warm and moist for a month. Pieces of the larger roots of *Wigandias*, *Aralias*, *Polymnias*, etc., are preserved, cut in short pieces, and laid in sandy soil in pans; and with the assistance of a little bottom heat, these soon furnish nice healthy young plants for next year’s planting, and in many cases they are preferred to the old plants. After cutting off the blackened stalks of the *Cannas* close to the roots, and the leaves of the *Caladium esculentum* and others close to the stalk, they are lifted carefully with the fork, and if wet, allowed to dry a little, as is the practice with potatoes and other roots; they are then taken to the cave or cellar, and laid in thin layers, a little dry earth or sand being sprinkled over all. Although *Cannas* will

preserve their vitality in the open ground during the winter with little or no protection, yet, practically, it is not found desirable; for, as a rule, they make a finer growth when their situations are annually changed than when allowed to remain in the same place two years running. No plants give greater satisfaction than Cannas, so varied are their leaves and flowers. They are very extensively used in all sorts of combinations. In some private gardens 2000 is not considered too many; while the Ville de Paris uses upwards of 500,000 of them.

‘At the end of April they are brought forth from their winter quarters and examined, any decayed portions of the tubers cut away, and the large sound parts divided; potted by some, but by other gardeners treated in this manner: A few frames are placed on the dung and leaf beds, and a little light rich soil is laid on, and then the Canna roots are laid in just in the same way as Asparagus roots, but not so thickly; a little soil shaken in about the tubers is all that is needed.

‘By the middle of May they are lifted with masses of Asparagus-like roots, and with a short six-inch growth, and carefully planted in the richly-prepared, elevated bed or borders, low enough to form a basin by which water, in a pure or manurial state, is given to the roots efficiently and abundantly. The Aralias, Polymnias, Brugmansias, Solanums, etc., after gaining a few new roots in the warm atmosphere, are transferred to the orangery, where they remain in a comparatively dormant state till wanted again in April or May; and it is astonishing how they improve and grow in a very short time after being planted. When young plants are short, a few old ones are placed in heat in early spring, where they furnish a plentiful supply of cuttings, and, with

ordinary care, are struck with facility. A cutting in February has been known to grow into a plant by the month of October 10 feet high ; and in the case of that coarse-looking plant, *Ferdinandia eminens*, to 15 feet. This plant is not to be compared to that breadfruit-looking plant, the *Polymnia grandis*, from which it is scarcely recognisable at a distance. In a few private gardens, hardy, variegated, herbaceous, and other plants are beginning to be used in combination with the foliage and flowering plants ; and this is a grand step in the right direction, as by this means the beds are never empty. Hardy well-grown evergreens are also planted extensively in borders employed as screens to buildings, the foliage plants occupying prominent positions, with the flowering plants in the borders. All the persistent foliage plants are wintered where heat only is given to exclude frost, with the exception of a few species of Palms,—these are accommodated in the conservatory ; but where plant decoration is carried out extensively in hotels and châteaux, they are used in the winter months for this purpose. With now and then, on mild days, a turn out-of-doors, and a good dash of tepid water administered with the syringe, again returned to their plateaux or vases, a good sponging once a week with rain-water, very little water given to the root, and that warm,—is all the care bestowed on them for months. Of course, the salons and entrance-halls in French châteaux and hotels in the capital are roomy, light, and airy, and heated genially with hot air. Thus it is that we see in and around the French capital, whether indoors or outdoors, masses of handsome, persistent, and beautiful foliage plants, associated with order and effect with flowering and berried plants all the year round,

and which we would do well to imitate, as far as our climate will allow, in this country.

‘The only feature I see that could be borrowed from the French flower-garden in any appreciable degree is, as I have already remarked, the liberal use of foliage with flowering plants. These, however, are only used in connection with the natural style of gardening. In the strictly parterre or French garden of Le Nôtre, very few of these plants are used, just because the long parallel borders are seen about the Tuilleries and Versailles, encompassing meaningless square and angled plots of green, with a vase or statue in the centre, have planted in their middles permanent objects, such as standard Lilacs, Cratæguses, Roses, and in summer alternated with Hollyhocks, Dahlias, Cannas, etc., that grow to a similar height; the intervening spaces and ground are covered with a complete conglomeration of flowering plants of all colours, without, in the least, studying effect in forming a design with the different coloured flowers they use. These borders are simply edged with Ivy, which is the only feature I see in the French parterre that could be imitated by English gardeners. These borderings could be greatly improved by using the variegated with the green Ivy, employing the green only at angles, and the variegated in circles and lengths. As regards the planting the borders themselves, they could be wonderfully improved by your style of planting—*e.g.* forming geometrical designs by the flowers themselves. There is an immense scope in these two gardens for your style of flower-gardening; but to carry this out, the spring-flowering shrubs, however beautiful they may be in spring, when grouped in a more natural manner, as seen about the Parc de

Morceaux, or the Bois de Boulogne, would require to be removed, and spring-flowering plants of the herbaceous class made to occupy their places for the spring months. A grand and magnificent garden would be the result, provided, as I say, they introduced your way of bedding, and at the same time used handsome foliage plants at terminating points, and centres of borders and beds, instead of the scraggy Lilacs and Roses now employed. The bordering of Ivy could not be improved on,—nothing in the vegetable world so fine as Ivy for a permanent border. I call them borderings, in contradistinction to the meagre box-edging, for here they are 12 to 18 inches wide : nothing is easier kept than they are. In winter they have a fine effect, and this would be greater if the variegated was used more than it is. As regards the planting and grouping of flowering and foliage plants in the natural style, or, as it is termed here, *jardin anglais*, I consider it perfect in many respects ; and I must say that the French gardeners show more talent in the planting than in the formation of these modern gardens. It is contemptible to see the petty concave and convex surfacings attempted to imitate nature, and, above all, such trumpery contortions attempted in small squares only 50 feet square, as at the Rondpoint, Champs Elysées. At the same time they show good taste in the adornment of their gardens ; but this, it must be remembered, is in a great measure due to the fine warm climate, whatever may be said to the contrary. To sum up, then, I consider the French gardener would do well to imitate the British in the superior manner of grouping flowers in the *parterre*, while the British would do well to imitate the French in using the foliage with flowering plants, and to intro-

duce the Ivy in place of the Box. Of course, in hundreds of cases it could be done advantageously in the case of large beds and long borders, in connection with gravel, but in scroll work it could not be used. But this sort of gardening I look on as useless ; therefore it would be a waste of valuable time to try to find a substitute for such silly gardening as Box embroidery. Another plant could be used with grand effect in many gardens—viz. *Thuja aurea*. At the ends of a large Chestnut avenue here we have formed squares on gravel, enclosing statues, with this plant. It has an excellent effect, and I have no doubt, in connection with borders of flowers, they could be used singly with good effect. Golden Yew also is a fine plant, but not equal to the *Thuja*. We have used ourselves upwards of 600 for different purposes. The sunk panelled garden which I made when I came here very hurriedly, is to be changed this spring ; all the grass banks surrounding which are at such an angle that they get sun-burnt in summer ; and I proposed to form Ivy banks of it instead of grass. The plan of the garden itself will also be changed, but is not as yet decided on. At present it is all in grass, with beds cut out on the grass. It has also been proposed to form an edge of *Thuja aurea* around the top of a bank encircling the whole, with variegated Holly at the terminating points, which are occupied with large marble vases. Surrounding this garden on the Chateau level are clumps of *Magnolias* and fine *Conifers* ; also standard *Rhododendrons*, but it is too hot for them : these are to be replaced with large round bushes of Yew. Pyramidal-formed plants—with the exception of *Conifers*—are preferred. Standard plants are not liked, with the exception of drooping plants, such as weeping

Holly, variegated and green. The Pyramidal Magnolias form another exception, but they are 15 and 20 feet high, and, planted as they are in clumps, look like one immense plant. As a rule, I myself have a prejudice for small pyramidal plants; the round ball form I think preferable to pyramids for flower-gardens. Of course I am speaking of gardens surrounded with large pyramidal Conifers and other trees.

‘In confined gardens where other trees are not seen, then all shapes of shrubs may be used with effect in connection with flowers. No plant has a finer effect in any position than the round outlined form of the Yucca. If we have one of this family, we have at least a thousand, planted in beds, vases, and rock-work, and large ones on grass, and other positions. I have one plant of the variegated Yucca aloifolia, which has stood out four winters, with 143 leaves, and standing only $3\frac{1}{2}$ feet high. With a little half-rotten litter around the roots, and a straw cap, this plant has withstood 28° of frost.

‘Nothing in France exists equal to your fine borders—such combination of colours are never dreamt of. I have done a little myself in this way, which has been very much admired by a few of the great gardeners here; but whether they will attempt anything like it, time alone will show. Certain it is, an extraordinary fine effect on the terraces at Versailles could be produced with your system of bedding, in place of the ugly arrangement now in vogue there; at St. Cloud also it would be grand in the extreme. At the same time, fine foliage plants, both hardy and tender, would have to replace the deciduous shrubs in certain places, not to the same extent, however.’

CHAPTER V.

HARDY ANNUALS.

ANNUALS occupy a very subordinate position in gardens now, compared with former times. It cannot be denied that, compared with those plants which have displaced them, they are generally only second-rate for the purpose of keeping up a long-continued display. Their deficiency in this respect is more fully realized on poor, hot, sandy soils, and on very heavy soils when they become hard and cracked during droughts. While this is a generally acknowledged fact, many annuals are in themselves strikingly beautiful, and in airy gracefulness far surpass many of our chief ornaments of the parterre, although they lack that solidity of habit and colouring which makes the *Pelargonium* and its associates so surpassingly effective for artistic decoration.

To some extent, at least, annuals owe the second-rate position into which they have fallen to bad management and neglect, as well as to the greater effectiveness of their popular compeers. With the same care and good culture bestowed on many of our annuals which have been devoted to their rivals, it is possible they would have held a more prominent position now. They have one great recommendation to those who cannot afford either to grow or purchase other bedding plants, and that is, that as many seeds can be bought for a few

shillings as will, in conjunction with a selection of hardy perennial plants, make the humblest garden gay for a few months of the year. But to attain this they require to be much more carefully cultivated than is general at present. Far too often all the cultivation that is bestowed upon them is to tickle the surface of a partially shaded bed or border, and sow them in 'rings,' where, if they escape being devoured by slugs and snails as soon as they come up, they are left unthinned and uncared for; and, as a consequence, the result is a weak, sickly, and short-lived crop of bloom. It is with the conviction that those who are so circumstanced as to be mostly dependent on annuals for a gay bed or border, can, by proper management, enjoy that source of pleasure, that the following cultural directions and list of varieties are given, which, if carefully attended to, will produce a display of annuals such as is seldom met with in the generality of gardens now-a-days.

Soil.—The soil most suitable for the great majority of annuals is that which is known as a sandy loam, deeply worked, and moderately enriched with manure. Trenching or deep digging is of the first importance; and where annuals are sown amongst herbaceous plants, as is very general, it is hopeless to expect them to do well if the soil is merely pointed over for a series of years. It will not only be best for the annuals, but for the permanent plants, to lift them at intervals of a few years, and trench and manure the soil. The best time to do this is in early spring, when the hardy plants are commencing to grow. When a shallow sandy soil has to be dealt with, if possible some heavy soil should be added to and mixed with it, and more manure should be applied than is necessary for better soils. A cold heavy soil should

have the contrary treatment; old lime rubbish, road grit, or any light sharp soil added and mixed with it, instead of much manure, will help to improve it. It should be turned up with a rough surface to the winter's frost; and in early spring hot lime sprinkled over its surface, and pointed in, will prepare a finer and more healthy staple for small seeds, while it will also help to counteract the growth caused by adding much animal manure. In this case the herbaceous plants must be heeled in somewhere for a time.

Time of Sowing.—The time when the display of bloom is wanted, must to some extent determine the time to sow. If required for autumn display, the end of May or beginning of June is sufficiently early. Indeed, early sowing under any circumstances is not to be recommended. If sown early, there are more chances against their coming up well, and slugs are much more likely to destroy them; for these pests are particularly troublesome to annuals in a young state. As a general rule, the end of April or beginning of May is early enough to sow. Those sown in May bloom at a time when, after the turn of the day, they continue much longer in good condition than when they come earlier into flower. When an early summer bloom of annuals is an object, and a little artificial heat in a frame or pit is attainable, I would recommend that, instead of sowing in the open border, they be sown in small pots, and placed in a gentle heat—60°—till they are an inch high. Then, after being well hardened off, they should be planted out without breaking the balls, say about the end of April, or even the middle of the month.

Sowing.—In sowing a bed of annuals, the first thing to do is to level and make fine and even the surface of

the soil. And suppose that a bed is to be sown with White Candytuft, to have a foot or more of a margin of *Nemophila insignis*, mark off the margin all round the bed, and then sow in shallow drills the Candytuft in the centre, and then the margin of *Nemophila*, also in drills, following the outline of the bed as a guide in drawing them. The drill system is preferable, as a Dutch hoe can be made use of immediately the young plants show themselves above ground, and they can be much more easily and regularly thinned. The frequent hoeing between the lines has a tendency to keep slugs in check, and, in a cultural point of view, is of considerable importance. Small seeds should just be covered with soil, and no more. Larger ones will do with a covering of an inch of soil.

Thinning, etc.—Thinning annuals is an important point of their culture very little attended to, and the neglect of it does more to injure them than any other matter connected with them. They are sown thickly, and oftentimes allowed to run up into flower without ever being thinned at all ; and the result is just the same as would occur in the case of a thickly-sown bed of Cabbage allowed to stand, without thinning or transplanting, to come to perfection in the seed-bed. As soon as they can be easily handled, thinning should be performed. Of course the more upright-growing varieties, such as Larkspurs, for instance, will not require so much thinning as those of a more spreading or branching habit ; but they should all be sufficiently thinned to allow each plant to develop itself properly. This should not be done all at once, but at two thinnings, at least where slugs are troublesome. The best way to deal with such enemies is to look over the beds, at night and morning

especially, and catch and kill as many as can be found. Lettuce or Cabbage leaves laid down among the rows will decoy them ; and if looked over every day in this way, they will be mastered. A first-rate *preventive* is a ring of sharp sand round the bed of annuals, or, indeed, young plants of any kind. No slug or snail will cross this.

It is a good plan to sow a small patch of each sort in a sheltered but not shaded place, or in pots, about ten or fourteen days after the sowing has been made in beds and borders, so as to have them in reserve to transplant in case of failure. When it is an object with amateurs to have an early bloom, and when, at the same time, they have no frame or pit to sow in, some of the hardier sorts may be sown at the end of March in small patches, and covered at night with flower-pots for some time after the seeds are up. In this way some early patches of bloom can be had in mixed beds. Besides this, as is fully described for spring-gardening, many annuals, such as *Collinsia*, *Erysimum*, *Eschscholtzia*, *Candytuft*, *Lupins*, *Nemophila*, *Saponaria*, *Silene*, can be sown thinly in autumn in a rather poor dry soil in a sheltered border ; and, allowed to stand the winter in a small state, they transplant well in spring with little balls. During severe weather they can be slightly protected with evergreen boughs or mats. These are methods by which, from the poorest resources, an early show of annuals can be had if desired.

There is another point connected with the culture of annuals which, if assiduously attended to, tends as much as any other to the prolongation of their season of bloom ; and it is the simple one of removing all decaying blossoms, and so preventing seed-pods from being formed. When this is constantly seen to, the energies of the plants

are directed towards the production of wood and flowers, and these are produced much finer, as well as more abundantly, than if the plants are allowed to produce seeds in the ordinary way. Another matter of considerable importance is to water in dry weather—not small drops frequently, but good soakings sufficiently often to prevent the ground from cracking or becoming very dry. This, in conjunction with the stirring of the surface of the soil, is of first-rate importance.*

Staking.—Such varieties as require supporting to prevent their falling over from the influence of rains and high winds, should be attended to before they become full-grown. There cannot be anything more unsightly in an otherwise neat garden than the too common method of tying annuals, or, indeed, any plant, bundle-like to a single stake. Those in beds should have some twiggy branches, such as birch or beech twigs, put in among them. Spruce branches that have lost their leaves supply excellent spray for this purpose; sticking these neatly round the plants before they are fully grown, so that ultimately the supports are hid, is an excellent plan. And the same method answers equally well for those sown in patches, only in their case the twigs should be put quite close to the plants, so that, when they grow a little, the leaves and branches hide the supports.

The following is a select list of hardy annuals. Those marked thus (*) are best where a small collection only can be grown; indeed, the two dozen or so marked afford material enough for a large and effective display. Those marked *a* are most suitable for sowing in autumn to stand the winter.

* See Chapter on Watering.

Select List of Hardy Annuals.

- Adonis flos (Pheasant's Eye), scarlet, 1 foot.
- a* Agrostemma cœli-rosi fimbriata, rose, with white centre, $\frac{3}{4}$ foot.
- * *a* Alyssum maritimum, white (sweet-scented), $\frac{3}{4}$ foot.
- a* Bartonina aurea, bright yellow, $1\frac{1}{2}$ foot.
- a* Calandrinia speciosa, rose, $\frac{1}{2}$ foot.
- * *a* Cacalia coccinea, scarlet, 1 foot.
Cacalia aurea, deep orange, 1 foot.
Callirrhoe pedata nana, crimson, 1 foot.
- * *a* Calliopsis Drummondii, yellow and red, 2 feet.
Calliopsis bicolor atrosanguinea, blood red, 2 feet.
a Calliopsis coronata, orange, 1 foot.
a Campanula Loreii, dark blue, $\frac{3}{4}$ foot.
- * *a* Candytuft, white, white, 1 foot.
- * *a* Candytuft, lilac, lilac, 1 foot.
- * *a* Candytuft, crimson, crimson, 1 foot.
Centranthus macrosiphon, scarlet, 1 foot.
- * *a* Chrysanthemum tricolor Burridgeanum, white, edged with crimson, $1\frac{1}{4}$ foot.
- * *a* Clarkia pulcherrima, bright carmine, $1\frac{1}{2}$ foot.
Clarkia integripetala, crimson, 1 foot.
Clarkia integripetala flore-pleno.
Clarkia elegans flore-pleno, rose and white, variegated, $1\frac{1}{2}$ foot.
- a* Clarkia alba fimbriata, white, $1\frac{1}{2}$ foot.
- * *a* Collinsia tricolor, purple and white, 1 foot.
- a* Collinsia grandiflora, blue and purple, 1 foot.
- * *a* Collinsia verna, blue and white, 1 foot.
Collomia coccinea, scarlet, 1 foot.
- * Convolvulus minor, blue, 1 foot.
- * Dianthus hybridus, crimson, 1 foot.
- * *a* Erysimum Peroffskianum, orange, $1\frac{1}{2}$ foot.
- * *a* Eschscholtzia Californica, yellow, 1 foot.
- * Eucharidium grandiflorum, crimson, 1 foot.
Gilia capitata, blue, $1\frac{1}{4}$ foot.
- * *a* Gilia tricolor, lilac, white, and purple, 1 foot.
- a* Gilia rosea splendens, rose, $1\frac{1}{4}$ foot.
Godetia Lindleyana, lilac and red, $1\frac{1}{2}$ foot.
Godetia rubicunda, crimson, $1\frac{1}{4}$ foot.
Godetia rosea alba, rose and white, $\frac{3}{4}$ foot.

- Hibiscus Africanus major*, yellow and purple, 1½ foot.
Isotoma axillaris, blue, 8 in.
Isotoma petraea, cream colour, 1 foot.
 * *a Kaulfussia amelloides*, bright blue, ½ foot.
 * Larkspurs of sorts, 1 foot.
a Leptosiphon densiflorus albus, white, 1 foot.
Leptosiphon aureus, golden, ½ foot.
a Leptosiphon aureus, yellow, ½ foot.
a Limnanthes Douglasii, yellow and white, ¾ foot.
 * *a Lupinus nanus*, shaded blue, ¾ foot.
Lupinus albus, white, ¾ foot.
Lupinus albo-coccineus, scarlet and white, 1½ foot.
Lupinus Cruickshankii.
Lupinus Dunnettii superbus, purple and white, 1½ foot.
 * *Malope trifida grandiflora*, crimson, 1½ foot.
 * *a Nemophila insignis*, blue, ¾ foot.
Nemophila maculata, white, blotched with purple, ¾ foot.
a Nolana atriplicifolia, blue and white, ½ foot.
 Poppies, in variety, 1 to 3 feet.
 * *Reseda odorata* (Mignonette), ¾ foot.
 * *Sanvitalia procumbens flore-pleno*, yellow, ½ foot.
 * *a Saponaria Calabrica*, bright-pink, ¾ foot.
 * *a Saponaria Calabrica alba*, white, ¾ foot.
Schizanthus Priestii, white and yellow, 1½ foot.
 * Sweet Peas, 5 feet.
 * *a Silene pendula*, rose and white, ¾ foot.
Tropæolum Canariense (Canary Creeper), yellow, 8 feet.
a Venus's Looking-glass, blue, lilac, and white, ¾ foot.
 * *a Virginian Stock*, red and white, ¾ foot.

HALF-HARDY ANNUALS.—Some of the most effective of this class of annuals have been already recommended and treated of; but for the sake of those of my readers who may be able only to command the use of a frame or a few handglasses, and a slight hot-bed in spring, it has been thought advisable to treat briefly of this class under a distinct heading. In very favoured places as to soil and climate, nearly all the varieties that are enumerated may be sown in light rich soil in a south

border about the middle of May. But generally the assistance of glass and a slight bottom heat is necessary. A very slight hot-bed of leaves or stable-manure, or, what is better, equal proportions of both, should be put up in March. The inside of the frame should have light moderately rich soil put over it to the depth of eight inches. In this the seeds should be sown, in rows three to four inches apart, kept regularly and moderately moist; and when two inches high, they should be hardened off by degrees, and planted out from the middle to the end of May, according to locality. In transplanting them, care should be taken to do as little injury to the roots as possible; and attention in the way of watering for a time after being put out, should the weather be dry, is of great importance. If shaded by a few evergreen boughs—especially those sorts which make tap roots and few fibres—they will of course require less attention with water, and will get hold sooner. If time and space can be afforded to prick them out when a couple of inches high, they would make much more robust and better-rooted plants for final planting; but unless frames can be afforded for this, it is best left alone.

Select List of Half-Hardy Annuals.

- Amaranthus caudatus (Love-lies-bleeding), crimson, 2 to 3 feet.
- Amaranthus speciosus (Prince's Feather), crimson, 2 feet.
- Alonsoa Warscewiczii, bright scarlet, 1 foot.
- Brachycome iberidifolia, various colours, 1½ foot.
- Calceolaria scabiosæfolia, yellow, 1 foot.
- Chrysanthemum tricolor venustum, crimson, with yellow centre, 1½ foot.
- Clintonia elegans, blue, ½ foot.
- Dianthus Heddwigii, various, 1 foot.
- Helichrysum brachyrhynchum, golden, 1 foot.

- Marigold, African, orange, 2 feet.
 Marigold, African, lemon.
 Marigold, French, mixture, $1\frac{1}{2}$ foot.
 Marigold, French, dwarf miniature, orange, $\frac{1}{2}$ foot.
 Mesembryanthemum (Fig Marigold) tricolor, red, $\frac{1}{2}$ foot.
 Enothera (Evening Primrose) Drummondii nana, yellow,
 1 foot.
 Enothera grandiflora, yellow, 2 feet.
 Enothera Lamarckiana, yellow, 8 feet.
 Rhodanthe Manglesii, bright rose, $\frac{3}{4}$ foot.
 Salpiglossis, various, 1 foot.
 Schizanthus Grahamii, rose and yellow, 2 feet.
 Sedum cæruleum, blue.
 Senecio Jacobea, various, $1\frac{1}{2}$ foot.
 Sphenogyne speciosa, yellow, 1 foot.
 Stocks, Ten-week, various, 1 foot.
 Stocks, Intermediate, various, 1 to $1\frac{1}{2}$ foot.
 Venidium calendulaceum, orange, $\frac{1}{2}$ foot.
 Zinnia elegans, various, $\frac{1}{2}$ to $1\frac{1}{2}$ foot.
 Zinnia Mexicana, yellow and orange, 1 foot.

BIENNIALS.—Biennials are a class of plants which do not flower the same year they are sown. The year after they are sown they are in perfection; and those of them which live over the second year are of little or no use afterwards. Various dates have been recommended for sowing these; but generally they are not sown sufficiently early in order to make fine plants by the time they should be finally planted out. From June till August is the usual time for sowing; but it is much better to sow about the middle of May, certainly not later than the third week of that month.

Sowing.—A border having an east aspect is preferable for sowing them. The ground should be free, and moderately rich. The drill system of sowing is less likely to produce drawn weakly plants than the broadcast. Should the weather be dry when they are sown, a good soaking of water through a fine rose should be given, and then

some boughs or old mats, or anything that will shade, should be thrown over them till the seeds are breaking through the soil. Before the seedlings suffer from overcrowding, a rich well-exposed border should be manured and well pulverized, into which they are to be pricked off. This is the point in their culture which is perhaps of most importance to attend to, and one which it is the object of early sowing to allow plenty of opportunity for accomplishing. Plants that are allowed to remain in the seedling beds or lines till finally transplanted are never so fine as pricked-out plants. To get a fine strong plant and satisfactory bloom, they should be stocky and strong, and lifted with good balls, conditions which cannot be commanded by later sowing and only once transplanting. When pricked out, each plant should stand clear of its neighbour 6 inches, and in this way they grow into low bushy plants that can be moved with balls of soil and transplanted in autumn. They stand the winter much better from being nursed thus. All attempts at throwing up flower-stems must be checked by pinching them off as they appear.

Soil, and Transplanting.—To grow the majority of biennials well, they require a good holding loamy soil, and it should be prepared as already directed for annuals. The end of September, or from that time to the middle of October, is the best time to plant out where they are to flower. We prefer autumn to spring planting, because autumn weather is generally much milder than that of early spring, and late spring moving is not to be recommended. If carefully lifted with balls, and planted in autumn, they get a good hold before the dead of winter; but when autumn planting cannot be practised, they should be planted not later than the end of March

in spring. But the chief points of culture lie in early sowing, transplanting into nursery-beds, and planting in autumn with balls.

Select List of Biennials.

- Anchusa Italica, red and purple, 2 feet.
- Catananche bicolor, $\frac{3}{4}$ foot.
- Catananche cœrulea, $\frac{3}{4}$ foot.
- Canterbury Bella, various, 2 feet.
- French Honeysuckle, scarlet and white, 2 feet.
- Hollyhocks.
- Honesty, purple, $2\frac{1}{2}$ feet.
- Indian Pink, 6 inches.
- Œnothera fruticosa, yellow, 3 feet.
- Œnothera biennis alba, white, 2 feet.
- Stocks, Brompton, Cape, Emperor, various, $1\frac{1}{2}$ foot.
- Sweet-William, various, 1 to $1\frac{1}{2}$ foot.
- Rockets, purple and white, 1 foot.
- Wallflower, various, $1\frac{1}{2}$ foot.
- Valerian, red and white, $1\frac{1}{4}$ foot.
- Sweet Scabious, various, $1\frac{1}{2}$ foot.

In preparing these lists, plants that have been previously treated of are not included, and those most suited for the widest range of localities are enumerated.

CHAPTER VI.

HARDY HERBACEOUS PERENNIAL PLANTS.

HERBACEOUS perennials are a class of plants distinct in their nature from annuals and biennials, inasmuch as they live for an indefinite number of years, and differ from shrubby plants in the limited and less woody nature of their growth, and in dying down to the ground every year after they have flowered, and their leaves and stems have performed the functions necessary to their future wellbeing. They are a very extensive class, but, with comparatively few exceptions, not so well adapted for a continuous and artistic effect for grouping according to the reigning fashion in geometrical flower-gardens, as their more tender rivals now popularly known as bedding plants. They are, nevertheless, a most interesting class, and, individually, many of them are exquisitely beautiful ; and one feature in their character—namely, their hardiness—makes them available where the more fashionable plants cannot, for various reasons, take their place. It may perhaps be considered a little digressive here to refer to one loss which the young gardeners of the present day have sustained, to a large extent, in the exclusion of hardy perennials from the prominent position they occupied in the days of their predecessors. That loss consists in the study and observation which were absolutely necessary in order to their

becoming acquainted with the various genera and species of these border plants. I shall never forget the interest with which, in common with many young men, we studied, dried, and classified, from the fine collection at Bothwell Castle especially, and at other gardens besides.

It is with the view of assisting those of my readers who have no glass by means of which to grow the tender and half-hardy plants already treated of, and who do not feel disposed to purchase them, to see that there is no reason why they should not have very interesting flower-borders, by growing hardy perennials in conjunction with hardy annuals, neither of which calls for a single pane of glass in order to cultivate them well. Indeed, even to the most wealthy who reside at their country-seats in spring and early summer, hardy perennials that bloom from January and February till the middle of June are indispensable auxiliaries, if outdoor flowers in variety are to be enjoyed at all. This applies with still more force to business men who reside in the outskirts of large towns, and who are proverbially fond of gardening, for relaxation as well as for its own sake.

While we venture to suppose that these remarks will commend themselves to all who have to deal with the requirements named, we cannot endorse a good deal that has of late been advanced condemnatory of the very effective but more tender plants, now so prominently used in most gardens. But as this has already been referred to, I desire not to say anything more here than that, while both descriptions of plants are recommended, it is not for a moment to be understood, that to make autumn flower-gardens gay with flowers is a point to be accomplished in the highest degree without patronizing

very largely the half-hardy and tender plants already treated of. The whole question, as to when or where perennials should be in the ascendant, and *vice versa*, must depend on the season when flowers are required. If that season be spring and early summer, then half-hardy and tender plants are of necessity excluded; but if in summer and autumn—more especially for all geometrical designs,—these will be placed in the ascendancy. Their habit of continuous blooming, and more compact and manageable growth, at once distinguish them for this particular season. The two classes should not be looked upon altogether as rivals, but as relieving parties,—the one to be on service while the other is reposing.

Spring flower-gardening, on the grouping system, shall be treated of by and by: the object here is to recommend and treat briefly of a selection of hardy plants that bloom in early spring, and onwards till autumn; and for which, as a whole, the mixed border must be looked on as the most appropriate place; and where, with a mixture of annuals and other plants, an interesting succession of flowers can be kept up for a long time.

Culture.—The great majority of the plants enumerated in the accompanying list thrive well in ordinary garden soil. A deep sandy loam embraces the wants, in this particular, of the greatest part of the most showy herbaceous and bulbous plants. In preparing a border for a fresh plantation, it should be well manured, deeply trenched if the staple allow of it, and thoroughly pulverized. Previous to planting, a good dressing of leaf-mould, forked in and mixed with the top spit, will be of great service. In soils that are tenacious and wet, thorough drainage is of the first importance. Road grit,

or finely-sifted mortar rubbish or burned soil, mixed in with such soil, is very beneficial mechanically; and these plants, generally speaking, thrive well with such. Light hot sandy soil calls for contrary treatment, and a dressing of good-holding loam will greatly improve it. Depth of soil is of great importance in the culture of the majority of herbaceous plants. If shallow, and lying on a hard subsoil, their bloom will be comparatively poor and short-lived, especially in dry seasons and localities.

Tuberous and bulbous-rooted plants are best planted in autumn. Although, with careful management, such things as Narcissus, Crocus, Snowdrops, etc., can be moved and planted, even when in bloom, successfully, it is nevertheless desirable to plant all such in autumn before they begin their growth upwards, so that plenty of time is allowed for them to make roots, and so insure a good growth and bloom in spring. The fibrous-rooted plants are generally so hardy that they can be transplanted and do well at any time when the weather is mild and the ground in working condition, after they ripen their summer growth, till they begin to grow for another year. In the case of the more weakly rooted and growing sorts, the spring—just as they are beginning to grow—is the safest time to remove and plant them. But large-growing strong-rooting things—such as Phloxes, Delphiniums, Asters, Potentillas, etc.—can be moved with impunity any time after they are cut down in autumn. Where a whole season's bloom has to be provided for, the best way is to plant the early and later flowering sorts time about. Planting first a spring-flowering plant, then a summer flowerer, and then an autumn-blooming plant—thus mixing them as regularly

as their heights and colours will allow—provides against there being extensive blanks at any given time of the season; and with the aid of annuals and half-hardy plants and bulbs, the gaps caused by the fading of the early-flowering sorts can be made up as they occur, by planting or sowing close to the early perennials before they go out of bloom. By the liberal use of hardy flowering bulbs—such as Crocuses, Snowdrops, Tulips, etc., which can be removed with balls, and laid in reserve to ripen, so making way for summer-flowering things—an almost incessant bloom can be maintained in mixed borders. All plants introduced into such borders for successional blooming should have the ground prepared for them, by mixing in some well-rotted manure with the soil both under and around their roots. This applies to bulbs—such as Hyacinths, Tulips, etc.—with equal force. If not convenient to carefully remove bulbous plants as they go out of flower, their foliage should not be cut away before it ripens; it may be pushed aside for the time, and the successor planted close to it. If left thus in the border, each patch should be marked with a piece of neat stake or label, so that it be not destroyed or interfered with by mistake. Indeed, many or most hardy bulbs are best left undisturbed for several years, for they bloom more strongly and increase better than when often disturbed.

The various colours afforded by the *Hepatica*, the *Primrose*, and other early-flowering plants treated of distinctly for spring grouping, are very beautiful, and they bear removal from mixed borders, if convenient to do so; and their places can be taken in mixed borders by autumn-sown annuals, and such continuous bloomers as *Stocks*, *Daisies*, *Pansies*, etc. And all who can winter a

few large plants of Scarlet Pelargoniums, and many other half-hardy things, will find that their brilliant hues lend a brightness to mixed borders which cannot well be had without them. The many things in the way of bulbous-rooted plants—such as Tulips, Hyacinths, Narcissus, etc., which can be bought at a cheap rate—are also available by those who, either from choice or necessity, are restricted to a mixed border. They can be potted in small pots in autumn by almost every one who possesses a garden, for they only require some light rich soil, and plunging in any snug corner, covered over with a few inches of light soil and loose litter to protect from frost. Here they can remain till such early flowers as Snowdrops and Winter Aconites are passed; then they can be planted as directed, either close to these early plants, or in their place, to bloom for a while, to be in their turn succeeded by tender subjects.

Very generally perennial plants are allowed to remain undisturbed in the same border and soil for many years in succession, receiving no further treatment than being dug amongst annually, with an occasional dressing of manure. It would be much better for them if they were lifted out of the border at intervals of a few years, and carefully laid in till the border was trenched and well manured, and, where practicable, a portion of fresh maiden soil substituted for a portion of the old. Strong sorts in the course of years rob the weaker feeders of nourishment, and require curtailing biennially at least to keep them within bounds.

The following lists comprise selections of the more common and easily cultivated showy sorts. I have resisted the temptation to make long lists of many that personally I am very partial to, but, instead, have

studied the useful and most suitable for mixed borders in moderate-sized places :—

Select List of Hardy Herbaceous Plants.

- Aubrietia grandiflora, purple, $\frac{3}{4}$ foot—April to June.
- Adonis vernalis, yellow, 1 foot—March and April.
- * Alyssum saxatile, yellow, $\frac{3}{4}$ foot—April and May.
- Alyssum saxatile foliis variegatis, yellow, $\frac{3}{4}$ foot—April to May.
- Anemone Apennina, blue, $\frac{3}{4}$ foot—March and April.
- Anemone fulgens, 1 foot—June and July.
- * Anemone coronaria, various, $\frac{3}{4}$ foot—March to May.
- * Anemone japonica, white, 2 feet—September.
- Anemone pavonina, crimson, 1 foot—April and May.
- Anemone sylvestris, white, $1\frac{1}{2}$ foot—April and May.
- * Aquilegia (Columbine) alpina, blue and white, 1 ft.—May to July.
- Aquilegia Skinnerii, scarlet and green, $1\frac{1}{2}$ foot—April to June.
- * Arabis albida, white, $\frac{3}{4}$ foot—February to May.
- * Arabis lucida variegata, white, $\frac{1}{2}$ foot—April and May.
- * Achillea (Milfoil) Eupatorium, yellow, 3 feet—June and July.
- Achillea aurea, yellow, 1 foot—June and July.
- Achillea ptarmica flore-pleno, white, $1\frac{1}{2}$ foot—June to August.
- Antennaria margaritacea, yellow and white, $1\frac{1}{2}$ ft.—July to Sept.
- Anthericum liliastrum, white, 1 foot—June and July.
- Aster amellus, purple, 2 feet—August and September.
- * Aster elegans, white, 3 feet—September and October.
- Aster ericoides, white, 3 feet—September and October.
- Aster Bessarabicus, violet, 2 feet—September and October.
- Aster lævis, blue, 2 feet—September and October.
- Aster Novæ-Angliæ, purple, $3\frac{1}{2}$ feet—September and October.
- * Aster versicolor, white and pink, 1 ft.—September and October.
- Armeria cephalotes, blue, 2 feet—June and July.
- * Baptisia Australis, blue, 3 feet—June and July.
- * Coronilla varia, pink, 1 foot—June and July.
- Cardamine pratensis flore-pleno (Double Lady's Smock), white, $\frac{3}{4}$ foot—March and April.
- * Campanula Carpatica, blue and white, 1 foot—June to August.
- Campanula grandis, blue, 2 feet—June to August.
- Campanula macrantha, blue, 3 feet—June to August.
- * Campanula persicifolia (varieties), blue, $2\frac{1}{2}$ ft.—June to August.
- * Campanula rotundifolia, blue, 2 feet—April and May.

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- Calimeris diplopappus, 3 feet.
- * Centranthus ruber, red, 2 feet—June and July.
- Cheiranthus Cheiri (Wallflower) (double and single), various,
1 to 2 feet—March to June.
- Cheiranthus Marshallii, yellow, $\frac{3}{4}$ foot—April to June.
- * Cheiranthus alpinus, yellow, 1 foot—April to June.
- Caltha palustris flore-pleno (Double Marsh Marigold), yellow,
1 foot—June and July.
- Chelone barbata, scarlet, $2\frac{1}{2}$ feet—June to September.
- Convallaria majalis, white, $\frac{3}{4}$ foot—April and May.
- Corydalis lutea, yellow, 1 to $1\frac{1}{2}$ foot—May to July.
- Chrysanthemum arcticum, white, $\frac{3}{4}$ foot—August and September.
- * Delphinium (Perennial Larkspur) (in varieties), various, 3 to 4
feet—June to August.
- * Dielytra spectabilis, rose and yellow, $2\frac{1}{2}$ feet—April to June.
- Dictamnus fraxinella, purple, 2 feet—June and July.
- * Dodecatheon Meadia (American Cowslip), purple and lilac, 1
foot—April to June.
- * Dodecatheon elegans, purple and white, 1 foot—April to June.
- Dracocephalum alpinum, yellow, $\frac{3}{4}$ foot—April and May.
- Epimedium pinnatum elegans, yellow, 1 foot—March and April.
- Erigeron speciosus, blue, 2 feet—June and July.
- Echinops Ritro, blue, $1\frac{1}{2}$ foot—June and July.
- * Eryngium alpinum, blue, 2 feet—July and August.
- Eryngium amethystinum, blue, $2\frac{1}{2}$ feet—June and July.
- * Fritillaria imperialis (Crown Imperial), various, 3 feet—March
and April.
- * Fritillaria meleagris, various, $1\frac{1}{2}$ foot—March and April.
- Fritillaria præcox, white, 1 foot—April.
- * Geum (Avens) coccineum, scarlet, $1\frac{1}{2}$ foot—June and July.
- Geum Chilense, scarlet, 2 feet—June and July.
- * Galega (Goat's Rue) officinalis, blue, $2\frac{1}{2}$ feet—June and July.
- * Gentiana asclepiadea, blue, 1 foot—July and August.
- * Hesperis (Rocket) matronalis, purple and white, 2 ft.—June to Sept.
- Helleborus niger, pink, $\frac{3}{4}$ foot—January to March.
- Hemerocallis flava, yellow, 2 feet—June.
- Hedysarum obscurum, rosy purple, $\frac{3}{4}$ foot—May and June.
- * Iberis (Candytuft) sempervirens, white, $\frac{3}{4}$ foot—March to May.
- * Iberis Gibraltarica, white, 1 foot—March to May.
- * Iris amæna, blue, 2 feet—June.
- * Iris Florentina, white, 2 feet—June.
- * Iris flavescens, yellow, 3 feet—June.

- * *Iris Germanica* (in variety), blue, 2 feet—May and June.
- * *Iris pallida*, blue, 2 feet—May and June.
Iris pumila (in variety), purple, $\frac{3}{4}$ foot—April and May.
Iris ochroleuca, purple, 3 feet—April and May.
- * *Iris Jacquesiana*, dark-coloured, 2 feet—April and May.
- * *Iris subbiflora*, violet, 2 feet—June.
- * *Iris variegata*, striped, 2 feet—May and June.
Lilium colchicum, lemon, 4 feet—June and July.
- * *Lilium excelsum*, cream, 4 feet—June and July.
- * *Lilium longiflorum*, white, 2 feet—June and July.
- * *Lilium chalcedonicum*, scarlet, 3 feet—June and July.
- * *Lathyrus* (Everlasting Pea) *roseus superbus*, red, 2 feet—July and August.
- * *Lathyrus grandiflorus*, purple, 4 feet—June and July.
- * *Lathyrus latifolius*, pink, 4 feet.
- * *Lupinus polyphyllus*, blue, 3 feet—June.
Lythrum roseum superbum.
- * *Linum flavum*, yellow, 1 foot—June.
Liatris scariosa, purple, 3 feet—September and October.
- * *Monarda didyma*, red, 2 feet—June and July.
- * *Monarda purpurea*, reddish purple, 2 feet—June and July.
- * *Narcissus poeticus*, white, 1 foot—March to May.
- * *Narcissus odoratus*, yellow, 1 foot—March to May.
- * *Narcissus major*, and varieties, yellow, $1\frac{1}{4}$ foot—March to May.
- * *Orobanchis* (Bitter Vetch) *vernus*, purple, 1 foot—March to May.
Orobanchis lathyroides, $2\frac{1}{4}$ feet.
- * *Ornithogalum umbellatum* (Star of Bethlehem), white, $\frac{3}{4}$ foot—April.
- * *Pyrethrum uliginosum*, white, 3 feet—May and June.
- * *Pyrethrum roseum* (single and double, in variety), various, 2 feet—June.
- * *Pæonia* (in variety), various, 2 feet—June and July.
- * *Phlox* (in variety), various, 2 to 4 feet—June to September.
Papaver (Poppy) *nudicaule*, yellow, 1 foot—April to June.
Papaver orientale, red, 2 feet—June and July.
- * *Potentilla* (in variety), various, 1 to 2 feet—June and July.
Pentstemon procerus, blue, 1 foot—June and July.
- * *Pentstemon gentianoides*, various, 1 to 2 feet—June to August.
- * *Polygonum Sieboldii* (in variety), white, 3 feet—June and July.
- * *Phlox pungens*, purple, 2 feet—June and July.
- * *Physostegia Virginiana*, red, $2\frac{1}{4}$ feet—June and July.

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Polemonium cæruleum (Greek Valerian), blue, 1½ foot—June and July.

Ranunculus acris flore-pleno, yellow, 1½ foot—June and July.

* *Statis latifolia*, blue, 2½ feet—June to August.

Spiræa filipendula flore-pleno, white, 1½ foot—June to August.

Spiræa venusta, rose, 2½ feet—July and August.

Spiræa japonica, white, 2 feet—July and August.

Stenactis aruncus, white, 3 to 4 feet—July and August.

Stenactis speciosa, purple, 2 feet—July to October.

Symphytum Caucasicum, blue, 1½ foot—June and July.

Saponaria ocymoides, red, ¾ foot—June and July.

Stipa pennata (a grass), 1 foot—June and July.

Tritoma uvaria glaucescens, red and orange, 3 ft.—Aug. to Oct.

Tritoma grandis, red and orange, 5 feet—October to January.

Trollius Asiaticus, orange, 1 foot—May and June.

Trollius napellifolius, yellow, 1½ foot—May and June.

Trollius Europæus, yellow, 1½ foot—May and June.

Thermopsis fabacea, yellow, 2 feet—June and July.

Tradescantia virginica (Virginian Spiderwort), various, 2 feet—May and June.

Veronica gentianoides, blue, 2 feet—May and June.

Veronica teucrium, light blue, 2 feet—June to August.

Veronica corymbosa, blue, 1½ foot—June to August.

Veronica amethystina, blue, 2 feet—June to August.

This list might be considerably extended, and many other interesting plants added to it, but I have aimed at compiling such a selection as are most showy border flowers, and that thrive well in ordinary garden soils. Some of those that shall be treated of and recommended for spring beds, as well as the beautiful hardy bulbs recommended for the same purpose, are not included here.

Those marked * are most desirable for a small selection, and are very beautiful plants,—especially well worth the attention of amateurs who can devote a border to them and the lovely hardy spring bulbs, which, used together as has been described, keep up a long succession of bloom as a mixed border.

CHAPTER VII.

ROSES.

THERE are few who may be termed fortunate enough to be the possessor of a garden, however humble, who do not desire, and who should not be encouraged, to have a bed or beds of Roses as their space may allow. This 'Queen of Flowers' has a beauty and fragrance which is scarcely attained in any other family of plants. But notwithstanding these charming features, and although, taken as an individual flower, there are none other in the whole fraternity of bedding plants to excel or even to rival the Rose, we do not recommend their extensive introduction to the formal parterre or group of beds where solid colouring, to be effective alike when closely inspected or viewed from a distance, is the object in view. This is not said disparagingly of the lovely Rose; and probably, even for this purpose, with extra good management, it might, in its full flush of bloom, for a short time play a most prominent part. In many instances garden establishments of any note can and do afford to this grand flower a garden to themselves; and probably there is not another family of plants that so much deserves to be so specially set apart and treated.

Like most other flowering plants planted for effect, Roses are most effective in groups or beds of distinct colours. To grow a large collection or variety in this

way demands a good amount of space, unless the groups be very small; and this cannot in many cases be adopted. But a mixed border, or a bed or two, is within the reach of most owners of gardens; and when the mixed system becomes a necessity for want of space, it must surely be termed a charming necessity, and, attached to a garden, must form a pleasing variety. In accordance with the special object of this work, it is not intended to deal with the various phases of Rose culture. To treat briefly of their culture as a flower-garden plant suitable for beds, pillars, and walls, is all that is to be attempted. To all who wish to become more thoroughly acquainted with Rose culture and capabilities, I would strongly recommend the careful study of *The Rose Garden*, by Mr William Paul, who must be regarded as one of the most reliable of authorities; and this work of his seems to leave nothing about Roses unexplained, and expressed in the author's well-known clear style.

Propagation by Cuttings.—Generally speaking, Roses for beds are best on their own roots, more especially where the soil is light. But in heavy cold soils it is preferable to plant such as are budded on the very dwarfest briar stock. The Hybrid Perpetuals, Bourbons, Hybrid Bourbons, and China and Hybrid China Roses, which are the very best for beds, succeed in the majority of soils. The propagation of these sorts (except the China and Bourbons, which require glass) by cuttings, is nearly as easy as the propagation of the Gooseberry or Currant in the open border, without any protection whatever. This renders them peculiarly the Roses for amateurs, as well as all who wish to propagate their own Roses easily and speedily.

From the middle of September to the middle of

October is the best time to propagate these varieties in this manner. In taking the cuttings, those that have well matured their growth, and are strong and straight, should be selected. And in detaching these from the parent plants, take with them a small portion of the previous year's growth; and in doing this it is readily understood how not many cuttings should be removed near to one another, or the parent plant will be mutilated, whereas a thinning-out where they are crowded proves beneficial. In making the cuttings, cut their base cleanly through, just where the season's growth has started from, taking rather a thin slice of last year's wood to form a heel to the cutting; they should then be shortened to 9 or 10 inches in length, and are in this condition ready for being put into the ground. A border with a west or east aspect, or, indeed, anywhere where the soil is light and dry, answers well for putting them in. And the best way to put them in is precisely as practised in almost every garden with Gooseberry cuttings, namely, digging the ground as you go on with the putting in of the cuttings, in rows a foot apart, and from 5 to 6 inches between each cutting, and so deep as only to have three to four eyes above ground,—fixing each row well in the ground.

To protect them from very severe frost is all the care that is necessary in the winter. Various ways can be pursued for thus keeping them. Of course, those who can afford to give them the protection of a frame or handglasses had better do so; but it is not indispensable to success. Evergreen boughs, mats, or any similar protection, answers perfectly well, till all danger from severe frosts is over.

These make beautifully rooted plants by midsummer,

without any further care than being kept clean, and the surface of the soil being stirred occasionally. And in November they can either be run out into nursery lines a foot or so apart each way, on deep, rich, loamy soil if possible, to make growth before being planted permanently in the beds; or they may be planted in the beds at once, to be afterwards thinned out when they get larger. In cold localities they stand the frost better if left unremoved till spring, when severe frosts are over.

Those who can command pots and pans with a gentle bottom heat, can root them at midsummer, as soon as the plants have shed their first crop of bloom. They should be taken from the parent plant the same way as described for autumn cuttings; only they need not be so long—about 3 inches, to insert in the pot, and two to three leaves or buds above the surface. Eight-inch pots, well drained, are firmly filled with about equal proportions of light loamy soil, leaf-mould, and silver sand,—the sand perhaps more than in equal proportion to the other two. When inserted not too thickly to crowd the leaves and cause them to be shed prematurely, they can be placed under the protection of glass, and shaded from the sun, kept moderately moist at the root, and a little air put in for the night. Here they should remain for three weeks, or till the cuttings are calloused, when they should be plunged in a gentle bottom heat, where they will soon emit roots. If put into bottom heat at once, they are forced to grow and exhaust the store of energy laid up in the cuttings; most of them would form a growth without making roots first, and many chances are against their ever making roots at all under such circumstances. After they are rooted they can either be potted off singly into 4-inch pots—

which is the best way,—or they can be potted, two or three or four, into 6-inch pots, and returned to the pit or frame again for a few days, till they get hold of the soil. In potting off, two parts loam, one of rotten manure, and a sprinkling of sand, is best. It is safest to winter those in pots under some protection till the following spring.

The Tea-scented, China, and Bourbon Roses do not root well except they have the protection of glass; but require no artificial heat to strike them successfully. Cuttings about 4 or 5 inches long, taken off and prepared in the same way as described in the case of Hybrid Perpetuals, Hybrid Chinas, and H. Bourbons, and put in sandy soil in any well-sheltered place in the autumn, will be rooted in spring, when they should be potted off and kept under glass till established in pots, and planted out in June. Throughout the winter they are apt to be tormented with worms, and the best way to prevent this is to put a layer of fresh soot under the prepared soil in the handglass. Damp, too, affects them injuriously; and the lights should be taken off occasionally when the weather is fine.

Nurserymen generally keep a stock of these Roses in pots, expressly for planting in beds, and they can now be purchased very cheaply. They force the Teas, and other sorts as well, like a Verbena or any other bedding plant, and strike the young growths in bottom heat the same as any soft-wooded bedding plant; and cuttings so rooted make nice little plants the same year.

Propagation by Budding.—This is an interesting operation, and one at which many amateurs are expert and successful. The Dog Rose, which grows so abundantly in the neglected hedgerows of many parts of England, and the Manetti, are the stocks mostly used

for budding on. There is a great difference of opinion among the highest authorities as to the comparative merits of these two stocks. In *The Rose Garden*, Mr William Paul asserts very positively that his experience condemns the Manetti as a stock for delicate Roses, for which others recommend it, and states that he finds them grow more vigorously on it for a year or two at first, but that they decline as rapidly. Our own experience, on a rather light loamy soil, corroborates this.

The stocks should be planted in autumn, in well-manured, deeply wrought, loamy soil. All the strong roots should be cut closely back, so as to encourage a tendency to make more fibrous ones. The stems should be cut back to the height desired. If for beds of dwarf Roses, they should be cut down to within 6 or 8 inches of the surface of the ground. As soon as they begin to grow in spring, look over them, and remove all the buds but three, leaving those nearest the top of the stock, and that are arranged regularly round it.

The time to perform the operation of budding must be determined by circumstances; for although July is generally the best time in ordinary seasons, yet the exact time is to be determined. When the bark can be easily raised, or made to part from the shoot, tells the proper time to commence budding.

The way to perform the operation is so minutely and clearly described in *The Rose Garden*, that we quote that authority in preference to our own:—‘In the first place, obtain a shoot from the tree whose identity we wish the stock to bear. From this the leaves are cut off, leaving, however, about half an inch of the leaf-stalk to every bud. Before proceeding further, the prickles should be rubbed off both stock and scion, that they may not interfere

with the operation. Now take the budding knife in the right hand, and make a longitudinal cut an inch in length, terminating at the top end with a cross cut. In using the knife, take care not to cut too deep; through the bark is all that is necessary. Now turn the handle of the knife to the incision, running it up and down the cut, twisting it slightly on either side, to raise the bark. All is now ready for the reception of the bud. Take the shoot which is to furnish it in the left hand, with the thicker part towards the finger end, and, with the knife in the right hand, commence cutting about half an inch behind the bud, passing the knife upwards under the bud, and to about the same distance beyond it. The knife should have a keen edge, that the bark may not be ruffled in the operation. In cutting out the bud, the knife should pass through almost level; it may, however, in some cases, dip a little when passing directly under the bud, as the wood before and behind it are not always on the same level. If the bud be cut ever so skilfully, there will be a little of the wood adhere to it. This some advise the removal of; others say, let it remain: much depends on circumstances. If the shoot is not fully ripe, or if, from the nature of the variety, the wood is soft when taken, cut the bud as shallow as possible, and place it with the wood, in the stock. But the shoot is usually firm and ripe, and then the wood is withdrawn. . . . Place the bud on the back of the stock, parallel with the longitudinal incision, and with the upper end towards the top of the shoot; then with the handle of the knife (a budding knife, of course) raise the bark on the side opposite to that on which the bud is placed, pushing two-thirds of the bud beneath the bark with the thrust. Now raise the bark on the opposite

side, and the bud may be gently pushed under with the handle of the knife, or will probably drop in. When properly placed, the eye of the bud should be directly under the opening caused by the raising of the bark of the longitudinal incision; if it be not so, the handle of the knife should be inserted beneath the bark, to push it to a right position. . . . After being inserted, the bud should be drawn upwards to the cross cut, and the upper end cut at the same angle, that its bark may abut against the bark of the stock laid open by the cross cut. The bud then is inserted, and it now remains to bind it in. For this purpose, take cotton or bast,—the former is generally preferred. Commence tying at the bottom of the cut, passing upwards till the whole length of the incision is bound over. . . . About three weeks after the operation has been performed, the cotton may be removed. If the bud is not well united, let it be tied up *loosely* again; if it is, leave it united, and there is an end of care till the following spring. In February, the wild shoot may be cut away 2 inches beyond the buds, when the latter will break, and soon form a tree.'

A deep rather heavy loam on a dry or well-drained subsoil is most suitable for the Rose; but ordinary garden soil, if deeply worked and well manured with good substantial manure, grows them very well. They are particularly impatient of stagnant water about their roots; and no manner of treatment will ensure success till the ground be thoroughly drained. Where the soil is very clayey and cold, Mr. W. Paul recommends very strongly the mixture of burned earth; the soundness of which advice I proved nearly twenty years ago on the clayey soil of Hertfordshire, where I burned clayey soil to a large extent, and watched its beneficial effect on

many things besides Roses. A clayey bed can be very thoroughly improved by taking the bottom spit out, burning it, and mixing it with a good dressing of rotten leaves with the rest of the staple. Light hot soils are of course improved for Rose beds by the admixture of loam and rotten cow manure, in preference to either stable manure or leaf-mould. In planting Roses on heavy clayey soils, it is always best to defer planting till spring, when all danger of severe frost is over, and after the ground is in good working order; and on such soil a spadeful or two of lighter and rich soil about their roots in planting helps to give them a start. Tea-scented and other tender Roses should be grown against the shelter of a wall in all cold places; and in their case a dry soil is more desirable, both on account of their ripening better and standing more cold in dry than in heavy wet soils. Protection can easily be afforded to dwarf Teas by shaking a little dry straw or ferns among and over them, and on walls by mats. Mr Paul's directions for pruning with a view to secure abundance of flowers—the object sought in bedding particularly—are so excellent and practical, that I quote them in preference to my own:—‘When about to prune a Rose, I first look to the name, that I may know the habit and character of the variety I have to deal with. I must know whether it is a summer or perpetual bloomer, a strong or weakly grower, and whether the flowers are produced fine from low, middle, or top eyes, indiscriminately or not. It is only by knowing and considering these points that we can prune with accuracy and success. It is an axiom in Rose-pruning, that the more vigorous in habit a plant is the more shoots should be thinned out, and the less should those that are left be shortened in. This has in

view, in particular, the production of flowers in the most perfect condition. The eyes near the base of those kinds which form short shoots (especially the autumnals), usually produce the best flowers; and in the vigorous growers we prefer, for the same reason, the eyes about the middle of the shoot, or nearer its summit, if the wood be well ripened. All Roses make two growths in the year—first in spring, and again in summer, shortly after they have flowered. Some of the autumnals start afresh at short intervals throughout summer and autumn; but we wish at present to speak of spring and summer growths only, and ask to which we should look as calculated to produce the best flowers? When the shoots formed in summer are well ripened, we prefer them, and for these reasons. The growth at that season is generally more rapid, and the shoots, although usually of less strength, are freer in the bark; the eyes are more prominent and plump, and well stored with the juices required to supply nourishment and promote growth.'

Of course these excellent remarks apply to dwarf Roses on their own roots in beds, as well as to those worked on other stocks. But there is one object to be kept in view besides fine individual blossoms, when Roses are planted for effect in masses, and that is, a comparative amount of uniformity and compactness of growth. And in pruning for this object, the weaker growths should be pruned back to a few eyes, and the strong growths left from one to even two feet. But these latter should be fastened down either to stakes, or pegged down, so as to preserve the symmetry of the beds, if such is necessary, to correspond with surrounding objects; and in that way they throw up their blooms vertically, and have at the same time a check put upon their strong

growth, while weaker growths reap the benefit. In summer it is well to look them over, and cut partially such rampant shoots, which Roses in their own roots in rich soil are apt to make. We have seen very pretty beds and lines of Roses (Hybrid Perpetuals) formed by thinning out all the weaker shoots, and pegging the strong ones down close to the surface of the ground.

A top dressing of rotten manure should be applied annually to the beds in autumn, and slightly forked in in spring, taking care not to injure the roots; and on light poor soils, watering with liquid manure, such as the drainage from stables and guano water, is very beneficial, as also a good mulching of moss in the summer time. It looks neat, and prevents evaporation.

Green fly and the Rose grub are the chief enemies of Roses, and must be kept in check by syringing with tobacco water for the former, and constant hand-picking for the latter.

Hybrid Perpetual Roses suitable for Beds, and general effect for Flower-Gardens.

P	Admiral Nelson,	. . .	brilliant crimson.
P	Alexandrine Bachmeteff,	. . .	red.
A	Anna Alexieff,	. . .	rosy tinted with pink.
A	Anna de Diesbach,	. . .	rose.
A	Auguste Mie,	. . .	pink.
	Baronne Hallez,	. . .	red.
A	Baronne Prevost,	. . .	pale rose.
A	Beauty of Waltham,	. . .	crimson.
A	Caroline de Sansal,	. . .	flesh.
	Duc de Cazes,	. . .	crimson.
	Duchess of Norfolk,	. . .	purplish crimson.
P	Duchess of Sutherland,	. . .	pink.
	Géant des Batailles,	. . .	crimson.
P	General Jacqueminot,	. . .	brilliant red.
A	Gloire de Vitry,	. . .	rosy carmine.

	Jean Bart,	red shaded with violet.
P	Jules Margottin,	cherry.
	La Brillante,	rosy scarlet.
P A	La Reine,	rose.
P	Lion des Combats,	reddish violet.
	Lord Clyde,	scarlet.
	Lord Raglan,	scarlet crimson.
	Louise Darzens,	white.
A	Louise Peyronny,	rose-shaded lilac.
A	Madame Boll,	rose.
	Madame Caillat,	rosy red.
	Madame Charles Wood,	crimson.
	Madame Knorr,	rose.
A	Madame Laffay,	rosy crimson.
A	Madame Rivers,	flesh.
	Madame Victor Verdier,	carmine.
P	Mrs. Elliott,	purplish rose.
	Maurice Bernardin,	vermilion.
P A	Oriflamme de St Louis,	carmine.
A	Pauline Lansezeur,	crimson.
A	Prince Leon,	crimson.
P	Queen Victoria,	white.
P	Red Rover,	red.
P	Souvenir de la Reine d'Angleterre,	rose.
A	Souvenir de Leveson-Gower,	dark red.
	Souvenir de Comte Cavour,	dark crimson.
P	Triomphe de l'Exposition,	reddish crimson.
A	Triomphe de Paris,	crimson.
	Vainqueur de Goliah,	bright red.
	Vicomte Vigier,	violet rose.
	Victor Verdier,	cherry.
	Victor Trouillard,	brilliant crimson.
A	William Griffith,	pale rose.
	William Jesse,	crimson.
	William Paul,	reddish crimson.

‘Those marked A are fine late autumn bloomers, and those marked P are fine pillar roses. Pillar roses are very ornamental objects in good health, and full of bloom, and are very imposing when planted in a line—for instance, along the side of a walk, with evergreens

a little distance behind them as a background. The supports or pillars are of course most durable if of iron or cast metal ; but wood, if that portion of it which is sunk into the ground be charred, lasts a long time. Larch poles, with the snags left about 6 inches long, are commonly used for pillar roses, and last remarkably well.

‘ We commence pruning at the bottom of the pillar, by thinning out the vigorous shoots formed there. Two are cut off within a foot of the ground, and left to fill the base. . . . We ascend the pillar, thinning as we proceed, till we reach the top. Here we select one or two of the strongest and best-placed shoots to continue the ascent, and tie them up. From their position, an abundant flow of sap furnishes them with the means of free growth, and favours the rise of the plant. The small lateral or side shoots are now cut back to three or four eyes. If any spot in the pillar is thin, we cut a shoot back to one or two eyes, and thus get a strong shoot or two, by which we fill the vacuity next season. . . . We continue to follow this method of procedure from time to time, tying up the leading shoots till the pillar is covered the desired height, which, perhaps, should not exceed 12 feet. The lateral shoots of short well-ripened growth are those which produce flowers with the greatest certainty. They may be shortened in to four or six eyes. Pillar roses send up almost invariably strong shoots from the base of the plant during summer and autumn. These, if not wanted, may be cut out as soon as discovered ; but it is well to leave one or two, as they may often be made use of to keep the pillar in a vigorous state when perfected, or to renovate it when decaying : by keeping up a constant

supply of young shoots, the old hide-bound stems may be removed as they exhibit symptoms of debility.*

Bourbon and Hybrid Bourbons.

A	Acidalie,	.	.	.	B	white, blush centre.	
	Armosa,	.	.	.	B	deep pink ; splendid bedder.	
	Bouquet de Flore,	.	.	B			
P	Charles Duval,	.	.	H B	pink ; large and excellent.		
P	Charles Lawson,	.	.	H B	rose ; full and good.		
A	Catherine Guillot,	.	.	B	lilac rose ; fine autumnal flower.		
P	Coupe d'Hébé,	.	.	H B	deep pink : splendid.		
A	Dr Berthet,	.	.	B	cherry, shaded with purple.		
	Duchesse de Thuringe,	.	.	B	white, tinged with lilac ; fine.		
A	Empress Eugénie,	.	.		rosy blush.		
	Georges Cuvier,	.	.	B	bright rose.		
	Juno,	.	.	H B	pale rose ; very large.		
A	L'Avenir,	.	.	B	pine ; large.		
	Louise Odier,	.	.	B	rose.		
A	Marquise Balbiano,	.	.	B	rose colour.		[beds.
	Mrs. Bosanquet,	.	.	B	white centre, flesh ; splendid for		
	Madlle. Emain,	.	.	H B	white.		
P	Paul Perras,	.	.	H B	pale rose.		
	Paul Ricaut,	.	.	H B	crimson ; very fine.		
P	Pierre de St. Cyr,	.	.	B	pink.		
	Prince Albert,	.	.	B	scarlet crimson ; free bloomer.		
	Queen,	.	.	B	salmon ; splendid bedder.		
P	Sir Joseph Paxton,	.	.	B	rose-shaded crimson.		
A	Souvenir de la Malmaison,	.	.	B	flesh-colour ; fine for beds.		

The whole of these make good bedding roses, and many of them are among the best autumnal flowering roses we have, and do well in light loamy soils on their own roots. They are not quite so hardy as the Hybrid Perpetuals, and in cold localities would be best planted on walls, or exclusively in low bushes, so that, when severe winters occur, some fern or litter might be easily shaken among and over them for protection. This of course applies especially to cold situations and severe

* PAUL'S *Rose Garden*.

winters. The special feature in pruning them is, that it is best to prune closer than in the case of Hybrid Perpetuals. The weakest shoots should be removed entirely to prevent overcrowding, and the strongest cut back to three or four eyes ; and the operation is best deferred till spring, especially if late flowering be the object.

Chinese and Hybrid Chinese and Crimson Chinese.

P	Brennus,	.	.	.	H C	light carmine.
P	Chénérolé,	.	.	.	H C	vermilion.
	Cramoisie superieure,	.	.	.	C C	crimson.
	Clara Sylvain,	.	.	.	C	pure white.
	Fabvier,	.	.	.	C C	vivid crimson ; splendid.
	La Fraicheur,	.	.	.	C	rosy white, yellow centre.
	Madame Bréon,	.	.	.	C	rose ; very beautiful.
	Madame Bureau,	.	.	.	C	white, centre straw.
	Magna Rosea,	.	.	.	H C	light rose ; large and fine.
	Napoleon,	.	.	.	C	pink ; large and fine.
	President d'Olbecque,	.	.	.	C C	cherry red.
	Tancredi,	.	.	.	C	purplish crimson ; fine.

The Chinese (c) and Crimson Chinese (c c) varieties are the most continuous blooming roses we possess : hence the term Monthly Rose has been applied to them with great propriety ; for from summer onwards to Christmas, weather permitting, they yield their great profusion of bloom : hence their superiority as bedding roses. They are more impatient of severe frost than either the Bourbon or Hybrid Perpetuals. They bear pegging down in beds very well. If, after the early blooming shoots have shed their blossoms, some of the strongest are shortened back regularly all over the bed, a more regular and plentiful succession of bloom will be secured, as the younger or later growths will come away with greater vigour and regularity, and so maintain

an even crop of bloom. The Hybrid Chinese bloom only in summer. There is an interesting section of the Chinese Rose which, from their diminutive growth and bloom, are termed Fairy Roses. They are very pretty for edgings to other groups, especially on dry soils and mild localities. Of these, Alba (white), Fairy (pink), Jenny (crimson), and Nemesis (crimson), are amongst the best.

Tea-scented.

Adam,	rosy salmon ; very fine.
Abricoté,	apricot.
H Amabilis,	flesh colour, centre buff.
H Belle de Bordeaux,	pink, crimson centre.
H Belle Marie,	white.
Bougère,	salmon ; very fine.
H Buret,	crimson.
Caroline,	blush.
China,	white, creamy centre ; fine.
H Comte de Paris,	fleshy rose.
H Devoniensis,	cream ; splendid old rose.
Elize Sauvage,	pale yellow ; beautiful.
Eugène Desgaches,	light rose ; very fine.
H Gloire de Dijon,	yellow, suffused with salmon.
Goubault,	bright rose ; very fine.
H Homère,	rose and salmon.
Leveson-Gower,	yellow.
Madame Falcot,	yellow.
Madame de St Joseph,	pink ; very fine.
H Madame Damaizin,	cream and salmon.
Madame Maurin,	cream, shaded with salmon.
Madame Pauline Labonté,	salmon.
H Maréchal Niel,	sulphur yellow ; fine.
H Niphetos,	lemon ; very large.
Nina,	white.
H Safrano,	saffron.
H Souvenir d'un Ami,	salmon and rose ; fine.
Triomphe du Luxembourg,	flesh colour.
Vicomtesse de Cazea,	orange yellow ; fine.

The Tea Roses are singularly delicate in their colouring, the blending of tints almost bidding defiance to a proper description, and their peculiar and pleasant fragrance is agreeable to nearly every one. They are, however, tender as compared to other sorts, and, therefore, not suitable for outdoors in cold soils and climates, except against walls where they can be easily protected from frost, and where they ripen their wood, and bloom the best. We have marked H those that are hardiest. They make beautiful beds in warm soils and localities. In preparing beds for them, drainage should be particularly attended to, and the bed elevated above the surrounding level. During winter some evergreen boughs should be stuck in amongst them to afford them protection. Planted under glass, they are magnificent objects, and well deserve such a provision being made for them in large establishments. Pruning should always be deferred till after the frosts of spring are past.

Noisette.

B	Aimée Vibert,	.	.	.	pure white, splendid.
	Caroline Marniesse,	.	.	.	cream.
	Cerise,	.	.	.	rose.
	Cornelia,	.	.	.	lilac rose.
B	Du Luxembourg,	.	.	.	lilac rose.
	Lamarque,	.	.	.	yellow.
	La Biche,	.	.	.	white.
B	Miss Glegg,	.	.	.	white.
	Madame Massot,	.	.	.	white.
	Solfaterre,	.	.	.	yellow.
	Sir Walter Scott,	.	.	.	rosy lilac.
B	Madame Plantier,	.	.	.	white.
	Madlle. Aristide,	.	.	.	yellow.
	Pumila Alba,	.	.	.	white.
	Triomphe de Rennes,	.	.	.	canary.

Those marked B are most suitable for beds; and where

late flowers are an object, the Noisette Roses are very useful, as they keep on expanding their large clusters very late in the autumn. Some of them form fine Pillar Roses, such as Du Luxembourg and La Biche. They should not be so closely pruned as is recommended for the Bourbons and Chinese.

Provence or Cabbage Rose.

Cristata or Crested, . . .	rosy pink.
Common or Cabbage, . . .	rosy pink.
Rachel,	rose.
Reine de Provence, . . .	lilac blush.
Scarlet Provence, . . .	rose.
Unique or White Provence, . .	white.

The sweetness and beauty of these summer Roses make them universal favourites. They require liberal treatment as to manure, or they will not grow and flower well. They are very hardy, and best propagated by layers. In pruning, they should be closely cut back to two or three buds. The more robust growers may be left somewhat longer. There are some dwarf-growing or miniature Provence varieties, of which Burgundy, De Meaux, and Spong are the best.

Moss and their Hybrids.

Blush,	blush.
Celina,	crimson.
Common,	rose.
Crimson,	crimson.
Etna,	crimson.
Julie de Mersent, . . .	rosy blush.
Laneii,	purplish crimson.
Perpetual White, . . .	white.
Princess Alice, . . .	blush.
Princess Royal, . . .	flesh.

Reine Blanche,	.	.	.	white.
Salet,	.	.	.	rose.
White Bath,	.	.	.	white.

These are most exquisite summer blooming Roses. Like the Provence, they require a rich soil to cause them to develop their flowers and moss well. They require to be pruned in the same way as the Cabbage Rose. The common Moss is the sweetest.

Austrian or Yellow Rose.

Double Yellow,	.	.	.
Harrisonii,	.	.	.
Persian Yellow,	.	.	.

These are very hardy and favourite Roses, and form probably the most graceful standards of any, especially Harrisonii. They also make very beautiful beds pegged down while they last in bloom, which, however, is not very long. They require a rich dry soil to grow them well. In pruning them, it is only necessary to thin the growths out to prevent overcrowding, and those left should not be shortened beyond topping the longest, to form the plant into shape. Harrisonii requires even less pruning than the others, and it is probably the most desirable to grow, as it forms beautiful heads as standards, and is also the best for a bed when so grown.

The old double yellow, *Rosæ sulphurea*, is a beautiful rose, but very shy of blooming. I succeeded in blooming it regularly in Middlesex, planted against a wall, pruned it and trained exactly like a peach, but never topping it beyond the dead tops of the shoots. The shoots were kept closely nailed to the wall as they grew, and, managed thus, it flowered regularly; and a beautiful object is a perfect rose of this variety.

The foregoing lists comprise the Roses that are, generally speaking, most suitable for planting for producing effect in gardens. For beds, the Chinese give the most continual bloom, and the Bourbons are excellent for autumnal flowering. The Hybrid Perpetuals, though there is a pause in their flowering, are indispensable as summer and autumn Roses. There are many beautiful Roses included in the Damask and Gallica or French Rose sections; but as it is foreign to my object to treat of Roses except in the most popular and useful way, I pass them over, and will enumerate a few varieties which are most useful as wall and climbing Roses. Almost all Roses that are suitable for pillars are also suitable for walls, but there are some not generally used or suited for pillars that are, from their peculiarity of habit, strictly speaking, Wall Roses.

Climbing Roses suitable for covering walls, fences, arbours, arches, etc. :—

Boursault.

Amadis,	.	.	.	.	crimson.
De L'isle,	.	.	.	.	blush.
Gracilis,	.	.	.	.	bright red.

Ayrshire.

Ayrshire Queen,	purple crimson.
Dundee Rambler,	.	.	.	.	creamy white.
Queen of the Belgians,	.	.	.	.	creamy white.
Ruga,	.	.	.	.	flesh.
Splendens,	.	.	.	.	flesh.

These are, from their hardy and free nature, suitable for covering walls or the north side of any object that it is desirable to cover. The Ayrshire, in particular, are quick growers, and for running over an object and

covering it rapidly, they are admirably adapted. They are not very particular as to soil, and thrive almost anywhere. The Boursault Roses should not be much cut back at pruning, but instead, the shoots should be well thinned out, and those left laid in nearly their whole length. The Ayrshires require very little care of any sort, beyond being thinned out a little and confined to the object they are designed to cover. They form beautiful weeping Roses, budded on tall stocks.

Evergreen or Sempervirens.

Adelaide D'Orléans, white.	Myrianthes, peach.
Félicité Perpétuelle, flesh colour.	Spectabilis.

These are suitable for the same purposes as the Ayrshire, and have the additional recommendation of being nearly evergreen, for they retain their foliage till far on into winter. In pruning them, they should be treated similar to the Boursault—the shoots thinned out, and those left not shortened back much. They make excellent pillar and weeping Roses. Those three sections are best adapted for cold localities, where such as the Banksian do not succeed. The autumnal flowering Roses, such as the hardiest of the Teas, the Noisettes, Hybrid Perpetuals, the Chinas, etc., also make excellent Wall Roses, but of course are not so well adapted for covering quickly as those climbing or running varieties.

The Banksian.

Alba grandiflora, white.	White, white.
Jaune Serin, yellow.	Old Yellow, yellow.

These are magnificent objects on a wall in early summer, when they produce their enormous profusion of flowers in clusters. They are, however, tender, and

only suitable for localities where the soil is dry and the climate good. Where they succeed well, they grow very rapidly, making very long shoots. The older they get, the more freely do they bloom. They should be pruned in summer immediately after they are done blooming. The shoots should be thinned out, particularly those that are of most gross growth, as they are least likely to ripen. The growths left should not be shortened back much—merely topped.

The Macartney and Microphylla are also good climbing Roses, and bloom in autumn, but they are, like the Banksian, tender, and require warm, sheltered situations. In the generality of localities, it is much better to substitute for these tender varieties the Boursault and Ayrshires for summer, and the hardiest of the Noisettes and Perpetuals for autumn flowering.

Almost all the Roses we have enumerated are excellent as standard and half standard Roses; and those who admire them in that form can find plenty of them very cheap in the principal nurseries all over the country.

CHAPTER VIII.

ALPINE PLANTS—HARDY FERNS—AQUATICS, ETC.

A Selection of fifty of the best and most easily cultivated Alpine or Rock-work Plants.—In our gardens, the section usually going by the name of Alpine plants exhibits plants of many habits and widely diverse characters—from the English Lady's Slipper to the quaint and interesting little *Acæna* of New Zealand, with its long crimson spines. In common language, Alpine plants are understood to be such as grow on high mountains; but, as we generally collect them, a dwarf and beautiful little bulb of the Cape may stand beside that exquisite gem, *Gentiana bavarica*. As our selection of these will be limited, it shall be confined to what we may term the true Alpines—those little evergreen gems that enamel the higher mountain ranges of Europe with a beauty which, compared with that of the great vegetations of hot countries, is as finest jewellery compared to massive brasswork. As they differ somewhat in tastes and capabilities, an explanatory word will be added here and there, as is considered necessary.

Aubrietia grandiflora :—There are several Alpines in this natural order that usually take precedence of the *Aubrietias*; but, like the *Iberises*, they are best associated with herbaceous plants. *A. grandiflora* is named as one among many well worth growing, and as remarkably well suited for the embellishment of every

kind of rock-work. The variegated varieties are good rock plants.

Æthionema cordifolium : A charming little spreading Alpine, with neat habit, glaucous foliage, and pretty, soft, pink flowers freely produced. It can be easily raised from seed, and loves a sandy loam.

Acæna Novæ Zealandiæ : A little plant, forming a dense carpet covered with singular crimson spikelets—as curious as it is charming.

Antennaria dioica rosea : Rosy pink—a little gem.

Antennaria tomentosa : Quite a gem for a dwarf silvery plant. Makes capital dwarf bands or edgings, but in moist places must be taken up and stored in dry frames.

Androsace chamæ-jasme : Dense clusters of white flowers with yellow eyes.

Androsace lanuginosa : Have seen this do beautifully in the open border in light sandy soil. Flowers lilac and white with yellow eyes; trailing white silvery foliage.

Androsace villosa : A small neat plant with white flowers, slightly tinted with pink.

Acantholimon glauumaceum : a very pretty dwarf, and very hardy plant.

Alyssum speciosum : Makes a very neat silvery bush—quite a fairy-looking plant.

Anthyllis montana : First-rate either on rock-work or in the border—doing well even in the stiff London clay.

Campanula pulla : Exceedingly pretty—blue and white variegated. Wherever much rock-work has to be covered, *C. pumila* and its white variety will be found very useful.

Calandrinia umbellata : This may be considered not strictly an Alpine, but it is, without question, the most glowingly coloured of all dwarf plants, being a dazzling magenta crimson. It thrives as a perennial in the chinks of rock-work; but as young plants bloom so abundantly, it is best to raise some plants every year from seed. It likes a fine sandy or peat soil. We know of nothing more useful for sprinkling over a rock-work in summer,—its blooms are so attractive after the spring things are gone.

Dianthus alpinus : One of the loveliest Alpines in cultivation, with large and beautiful deep rose-coloured flowers spotted with crimson. It thrives best in peat or rich sandy loam, and with moisture.

Dianthus petræus : The true dwarf form of this is a first-rate Alpine,

growing freely on the ground as well as on the rock-work, and producing abundance of deep-rose flowers. It will grow and make neat cushiony masses where most other species of pinks last but a very short time. There are other sweet things in this order, but those named are the best.

Erinus alpinus : We have never seen this plant do so well as when it gets into a piece of old wall. It will cover several feet with a dense moss-like growth, and produce a perfect mass of pretty rosy-purple flowers. It likes dry quarters, and it sows itself freely.

Gentiana verna : An exquisite native Alpine, much neglected, but not difficult to grow in very gritty, moist soil. Rapid drainage and a rapid supply of moisture are necessary to its thorough wellbeing. Brilliant blue flowers. *G. acaulis* is too well known to need recommending here.

Gaultheria procumbens : This, though a tiny shrubby plant, is, when grown fully exposed, instead of in shade as usual, and covered with its red berries, one of the prettiest objects that can be seen among dwarf plants on a rock-work.

Lithospermum fruticosum : When well established and deeply rooted in veins of good soil on a rock-work, this is one of the loveliest deep-blue evergreen rock plants in cultivation.

Linaria alpina : A procumbent silvery-leaved plant, with violet flowers with scarlet throats. Sows itself freely, and is easily grown.

Mazus pumilus : A very pretty-coloured and dense-growing little plant.

Myosotis rupicola : A most beautiful species—perhaps the finest of the genus ; forms dwarf dense tufts, covered with its deep brilliant blue flowers. Requires a good supply of moisture.

Phlox Nelsonii, white ; *Phlox frondosa*, pink ; *Phlox verna*, rose ; *Phlox nivalis*, white ; *Phlox procumbens*, purple. These are very charming dwarf-growing and free-flowering plants, are very effective, and grow well in rock-work.

Primula farinosa : Few plants are more lovely than this, forming tufts of silvery leaves with pinkish-crimson flowers, supported on white powdered stems. It likes plenty of moisture in summer, but requires thorough drainage, otherwise it will suffer in winter.

Primula nivalis : A charming white—easy to grow.

Primula marginata : Large heads of dark lilac flowers.

Primula ciliata : Purple—fine.

Saponaria ocymoides : Pink—easily grown, and does well in the

ordinary herbaceous border, but is a useful rock-work plant for hanging over ledges.

Saxifraga cæsia : Exceedingly dwarf and pretty.

Saxifraga cristata : Large foliage, narrow, rigid, and edged with white.

Saxifraga hypnoides, or any of its varieties or allies, is excellent for furnishing a vivid green carpet in winter.

Saxifraga Juniperina : Very distinct dense spiny tufts, with yellow flowers.

Saxifraga lingulata.

Saxifraga longifolia : The true variety is a splendid plant, much finer than *pyramidalis* ; it is the queen of saxifrages.

Saxifraga oppositifolia, and varieties : Nothing can be prettier in rock-work.

Saxifraga Mansfieldii : A free-flowering green-leaved kind—very good.

Saxifraga pyramidalis : A handsome variety, throwing up racemes of white flowers, 1 to 1½ foot.

Sedum Ewersii ; *Sedum elegans* ; *Sedum sempervivoides* ; *Sedum dasyphyllum* ; *Sedum rupestre*.

Sempervivum arenarium ; *Sempervivum arachnoideum* ; *Sempervivum Californicum* ; *Sempervivum globiferum* ; *Sempervivum hirsutum* ; *Sempervivum montanum* ; *Sempervivum soboliferum* ; *Sempervivum tectorum*. — These two genera are all beautiful rock-work plants, and of the easiest culture.

Silene acaulis : This is sometimes very pretty when grown in pans for the cold frame arrangement, and it also produces a very dwarf verdant cushion on rock-work. It rarely, however, flowers so freely in a cultivated state as it does on its native mountains, where it forms large masses of its rose-coloured flowers.

Soldanella alpina ; *Soldanella Clusii* ; *Soldanella montana* ; *Soldanella minima* : A charming little group. They like a pure sandy loam, or peaty soil and moisture, and they sometimes do well in the common border, when left undisturbed for a time.

Rock-Plants.—The following instructive remarks on cultivating this interesting order of plants are extracted from a list of Alpine plants published by Messrs Backhouse, of York, than whom few are more fit to instruct on this subject ; and any one who wants a more extensive collection than we have named cannot do better than consult such a catalogue :—

‘The past two years have only confirmed our opinion that no form of horticulture surpasses, or indeed equals in interest, the cultivation of these Alpine gems. And even now, instead of revelling in the sight of *masses* such as Nature exhibits in the wild regions where these plants are found, we are limited to little tufts or fragments that, enchanting as they are, only convey to the mind a faint idea of what is yet in store for us. Think of a sheet of *Silene acaulis* measured last year on one of the Westmoreland mountains, *five feet across* ! and imagine the effect of such a mass when in full bloom ; for it not unfrequently happens that the pink, or rose-coloured, or crimson flowers of this plant are so densely clustered together as to form a solid mass of colour. And why should not our gardens be thus adorned ? Time only is required, for by far the larger proportion of Alpine plants are easy to cultivate, and even while small, abundantly repay the small amount of labour that is requisite. With something less than 25s. worth of rocks (costing here 9s. per ton) we have formed a rocky bank upon which many scores of choice Alpines thrive admirably ; for though contact with the rock is necessary for some, it is not needful for all. The improved drainage afforded by a bank 3 or 4 feet high, (in the composition of which a large proportion of rough sand should be generally used,) quite suffices for the wants of many species ; as, though “true mountaineers,” they inhabit the glades and plateaux of Alpine regions where there is often a large area of rich vegetable soil without rock.

‘One thing must constantly be borne in mind, that it is an error to suppose that “little plants” require but very shallow soil. As narrow a crack or crevice as you

please, only it must lead to an abundant supply for deeply-rooting, hungry fibres, that hate both "starvation" and the irregularity of temperature and moisture inseparable from shallow soil. *Gentiana verna* is a *little* plant, its tuft of leaves rarely attaining the elevation of an inch ; but we are not exceeding the truth in saying that it both likes (and apparently requires for full development) *eighteen inches depth at least* of rich fibrous loam, interspersed thickly with blocks of limestone ! It is almost impossible to get "to the bottom" of its far-rooting tiny threads in a native locality. And the same rule holds good with multitudes, and cannot be too closely attended to. Any kind of stone will do for rock-work, but sandstone (millstone grit) is the best. Where limestone is preferable (as with the Gentians), it is generally specially stated in the catalogue.

'A host of beauties are usually ready to expand their blossoms with the earliest days of spring, and frequently even among the snow. For a fortnight past (beginning with the last week in the old year), scores of pots of the lovely *Anemone Appennina* have expanded their large blue flowers with us on a northern border, in spite of frost and snow. They always appear to bloom sooner in such a position than with a southern exposure—we presume by "wintering" earlier.

'A very large proportion of the most showy species may be grown in an ordinary border in common soil, and nearly the *whole* range of Alpine plants (which constitute one of the most interesting class of perennials) *may also be grown well in pots* where a garden is devoid of the *rock-work*, which best represents their natural "element." Whether cultivated in pots or on rock-work, it may be well here to state that, after long ex-

perience, and far too much of that kind of "misfortune" which usually attends "experimenting" upon new plants, we find that, as a rule, it is an error to place in the shade in summer, for the sake of coolness, those species which inhabit very high mountain regions. These plants, as a class, hate the soft, humid, "lifeless" atmosphere, which shady situations in low districts afford. Living naturally on lofty ridges, they are constantly exposed to high winds, and an atmosphere of crystalline clearness, through which the sun's rays dart down with a vehemence which often heats the rocks till you can scarcely bear to touch them. This brilliant sunshine in the day time, alternating with excessively heavy dews or sharp frosts at night, are the *summer conditions* of a large number of the rarest and most beautiful species in their native abodes. And these, born near vast fields of perpetual snow, receive a rapid and permanent supply of moisture at the roots, which is checked only when wintry winds again bind everything in a mass of ice.

'Very rapid and perfect drainage, combined with an equally rapid and continuous supply of water, are therefore essential to thoroughly healthy development. On rock-work this may be easily accomplished by allowing water to escape from a pipe at or near the highest point, in a very slender stream, or "fast drop," which will keep a large "district" below both more humid and cooler than when similar effects are aimed at by ordinary watering. Some species—such, for instance, as *Eritrichium nanum*, *Androsace lanuginosa*, *Cerastium alpinum*, and those plants generally which have silky or cottony foliage—evidently dislike having their leaves wet by artificial means, especially in winter; as, in a wild state, they are either buried during that season in dry snow,

or subjected to frosts which destroy every particle of moisture. These must either be planted where an overhanging ledge protects from snow and rain, or be grown in pots, which can be placed under a glass frame admitting full ventilation in winter. Not that these plants are tender—they are nearly as “hardy” as the rocks themselves ; but their winter Alpine atmosphere is dry, till the spring thaw sets in.

‘There are many Alpine plants which are found chiefly (and perhaps some exclusively) in the grit of decomposed rocks carried down by torrents, etc. In this there is sometimes very little admixture of earth, though what little there is is usually of the richest kind.

‘Crushed millstone grit, or coarse sandstone, forms an excellent substitute, and should, if possible, be largely mingled with the soil of a “rock-work.” For some Alpines we use equal parts of grit and earth—a mixture of rich loam and peat or leaf-mould. If not procurable, river-sand is the best substitute. Some species grow well in almost pure grit. There are, however, not a few, we have recently ascertained, which, though found in grit (“*in glareosis alpium*”) in a wild state, thrive better under cultivation, if placed in pure loam in a fissure of rock. The simple reason seems to be that they are frozen dry, and *kept* dry for months, in their own land in winter ; while, when planted on rock-work, they are necessarily exposed to constant moisture during the winter months with us. The loam, from its compactness, does not receive or retain moisture so much as sandy or gritty soil, so that, though unnatural in one sense, it is *more* natural in another. *Senecio incanus*, *S. carniolicus*, *Achillæa*, *Clavennæ*, and others of this order, illustrate it well. Their tendency to “damp off”

in winter is notorious, and we believe may be largely rectified by this means.

‘Another most important subject is *to suspend the abundant supply* of moisture, essential for health in spring and summer (in imitation of the melting of Alpine snows), when the annual growth is made, so as to coax the plants “to be quiet” as far as possible, and prevent a second and enfeebling growth. This seems very important to the *Alpine Gentians*, and to the rare *Eritrichium nanum*. Natural rains will, as a rule, suffice after the end of August, and earlier if the weather be rainy. All artificial irrigation, except for bog plants, should then cease.’

THE HARDY FERNERY.—This is one of the most delightful departments of a pleasure-garden. To retire from the full glare of noon, and the flower-garden, with all its brilliant colours and somewhat stiff and formal trimness, into cool retirement, perhaps on the north side of a wall or rock, or under the shade of spreading trees, in which Ferns generally delight and luxuriate, makes a most refreshing change to both body and mind. The beautiful forms and varied shades of green which the Fern tribe present, are acknowledged as one of the most pleasing treats of the garden. To correspond both with the requirements of Ferns generally and that situation which the mind associates with these denizens of shade and rock, the fernery should occupy some quiet and shady, and, if possible, romantic retreat. Where the ground presents no romantic features, they are so easily produced with the aid of hillocks and banks of soil, and tree roots and stumps, and rough stones—all of which may be worthless for aught else but to form a rugged,

natural-looking site for the fern—that scarcely any need want the pleasure derivable from a fernery.

The following list comprises mostly British varieties, as being both most beautiful and hardy, as well as easily obtained. The few exotics enumerated are also very beautiful and hardy. Many more might be enumerated as being half-hardy—that is, requiring protection in winter and in spring, when commencing to grow; but we have avoided enumerating any except the perfectly hardy. Those who wish to study them minutely cannot do better than get Mr. Moore's work on Ferns.

List of British Ferns and Varieties for Hardy Fernery.

Deciduous. *Allosorus crispus* (Parsley Fern).

Grows from 6 to 9 inches in a stony dry situation.

Evergreen. { *Asplenium trichomanes* (Maidenhair Spleenwort), 6 to 9 in.
 " " var. *cristatum*, . . . 4 to 6 "
 " " var. *Moulei*, . . . 4 to 6 "
 These do not like either much shade or moisture; they are perhaps better grown in pots.

Deciduous. { *Athyrium filix fœmina* (the Lady Fern).
 " " var. *coronatum*, . . 1 to 1½ feet.
 " " var. *crispum*, . . . 1 to 1½ "
 " " var. *defissum multifidum*, 1½ "
 " " var. *Elworthii*, . . . 2 to 2½ "
 " " var. *Fieldiæ*, . . . 1½ to 2 "
 " " var. *Frizelliæ*, . . . 1½ to 2 "
 " " var. *grandiceps*, . . 6 to 9 in.
 " " var. *Grantiæ*, . . . 1 to 1½ feet.
 " " var. *plumosum*, . . 2 to 2½ "
 " " var. *multifidum*, . . 2 to 3 "
 " " var. *Vernoniæ*, . . . 1 to 1½ "
 " " var. *Victoriæ*, . . . 2 to 2½ "

These all delight in a good loamy and leaf-mould soil, and should be in the dampest part of the fernery. They delight in a shady, calm atmosphere; exposed to either sun or much wind, they are easily spoiled.

Evergreen. { *Blechnum spicant* (Hard Fern), . . . 6 to 12 in.
 " " var. *concinnum*, . . . 6 to 12 "
 " " var. *cristatum*, . . . 6 to 12 "
 " " var. *projectum*, . . . 6 to 12 "
 " " var. *heterophyllum*, . . 6 to 12 "
 " " var. *imbricatum*, . . . 6 to 12 "
 A good loam and peat, and an exposed part of the fernery, will answer for this sort.

- Deciduous. { *Cystopteris fragilis* (Bladder Fern), 6 to 9 in.
 " " var. *Dickieana*, 4 to 6 "
 " " var. *rhetica*, 6 to 9 "
 " " var. *montana*, 4 to 6 "
 These like shade, and a dry stony bottom; they like to grow among stones.

- Nearly Evergreen. { *Lastræa filix mas* (Male Fern).
 " " var. *crispa*, 6 to 12 in.
 " " var. *cristata*, 2 to 3 feet.
 " " var. *cristata angustata*, . . 1½ to 2 "
 " " var. *furcans*, 2 to 3 "
 " " var. *Barnesii*, 2 to 2½ "
 " " var. *Pindarii*, 2 to 2½ "
 " " var. *polydactyla*, 2 to 3 "
 These will grow in almost any soil,—good strong loam and peat or leaf-mould suits well; they stand more exposure than the Lady Fern.

- Evergreen. *Lastræa æmula*, 9 to 12 in.
 Nearly Evergreen. { *Lastræa cristata*, 1½ to 2 feet.
 " " var. *uliginosa*, 1½ to 2 "
 " " *spinulosa*, 1½ to 2 "

- Nearly Evergreen. { *Lastræa dilatata*, var. *Chanteriae*, 2 to 3 feet.
 " " var. *cristata*, 1½ to 2 "
 " " var. *lepidola*, 1 to 1½ "
 " " var. *angustipinnula*, . . . 1½ to 2 "
 These like a good rich loam and leaf-mould; they delight to grow among mossy shady banks.

- Deciduous. *Lastræa montana*, 2 to 3 feet.

- Deciduous. *Lastræa thelypteris*.

These like a damp cool situation.

- Osmunda regalis* (the Royal Fern), 3 to 4 feet.

- " " var. *cristata*, 2 to 3 "

In peat and loam and plenty of moisture when growing.

- Deciduous. { *Polypodium alpestre* (*Pseudathyrium alpestre*), 2 to 3 feet.
 " " var. *flexile*, 1 to 1½ "
 Similar situation to the Lady Fern.

- Deciduous. { *Polypodium Dryopteris* (Oak Fern), 6 to 9 in.
 " *Phegopteris* (Beech Fern), 9 to 12 "
 " *Robertianum* (*calcareum*), 9 to 12 "
 These like a shaded cool situation, but not too damp.

- Evergreen. { *Polypodium vulgare*, var. *crenatum*, 1 to 1½ feet.
 " " var. *cambricum*, 9 to 12 in.
 " " var. *semilacerum*, 1 to 1½ feet.
 " " var. *omnilacerum*, 1 to 1½ "
 " " var. *pulcherrimum*, 9 to 12 in.
 " " var. *cristatum*, 6 to 9 "

These like a stiff clay soil mixed with stones, and a dry situation; the roots delight to cling to any hard substance.

Evergreen.	{	Polystichum aculeatum,	2 to 2½ feet.
		" " var. proliferum,	2 "
		" angulare,	2 to 3 "
		" " var. cristatum,	2 to 2½ "
		" " var. imbricatum,	1 to 1½ "
		" " var. gracile,	2 to 2½ "
		" " var. Bayliæ,	1½ to 2 "
		" " var. grandidens,	1½ to 2 "
		" " var. grandiceps,	1 to 1½ "
		" " var. lineare,	2 to 2½ "
		" " var. proliferum,	1½ to 2 "
		" " var. " Wollastonii,	2 to 3 "

The Polystichums all like a good, rich, loamy soil, with plenty of shingly stones intermixed; they like a moderate shade, but a dry bottom.

Evergreen.	{	Scolopendrium vulgare (Hart's Tongue).	
		" " var. bimarginatum-cordatum,	6 to 9 in.
		" " var. contractum,	9 to 12 "
		" " var. crista-galli,	12 to 18 "
		" " var. crispum,	9 to 12 "
		" " var. digitatum,	6 to 9 "
		" " var. laceratum,	9 to 12 "
		" " var. fissum,	6 to 9 "
		" " var. ramosum majus,	12 to 18 "
		" " var. subcornutum,	6 to 9 "

All the Scolopendriums like a good strong loam mixed with leaf-mould or peat; they like plenty of water when growing, but should be in a dry part of the fernery.

Besides the foregoing British Ferns, which are all exceedingly beautiful, there are a good many natives of other countries, which prove perfectly hardy in this country:—

Adiantum pedatum.	Osmunda cinnamomea.
Adiantum venustum.	Platyloma rotundifolia.
Asplenium angustifolium.	Polypodium vulgare canariense.
Athyrium purpureum.	Polypodium Virginicum.
Athyrium strigillosum.	Polystichum Braunii.
Botrychium Virginicum.	Polystichum setosum.
Lastrea atrata.	Pteris aquilina (Bracken or
Lastrea decurrens.	Brake) Americana.
Lastrea Goldieana.	Pteris scaberula.
Lastrea opaca.	Seliginella involvens.
Lastrea thelypteroides.	Woodwardia angustifolia.
Lomaria Chilensis.	Woodwardia areolata.
Lomaria crenulata.	Woodwardia orientalis.
Lomaria fluviatilis.	

All these are hardy, and thrive in ordinary light sandy loam, with a mixture of peat, sand, and well-decayed mould; and if some freestone chips can be mixed in, they retain moisture, and the roots of ferns delight to cling around them.

HERBACEOUS PÆONIES.—In some nurseries and old gardens have been collected a great number of varieties of the species—*Pæonia officinalis*, *edulis*, *paradoxa*, *corallina*, *anomala*, etc.—many of which must be regarded as merely botanical curiosities, although some, from their quaint appearance, may form appropriate inmates of the shrubbery. The following, which are mostly varieties of *P. albiflora*, or the cognate species, have double flowers, and are extremely beautiful—indeed, as some think, more beautiful than *P. Moutan* :—

Albiflora.

<i>Amabilis grandiflora</i> , . . .	sulphur-white shaded rose.
<i>Anemoneflora striata</i> , . . .	blush yellow.
<i>Amabilis lilacina</i> , . . .	cream, with lilac centre.
<i>Buckii</i> , . . .	rose purple.
<i>Comte de Paris</i> , . . .	blush, citron centre.
<i>Duchesse d'Orleans</i> , . . .	rose, blush centre.
<i>Elegans superbissima</i> , . . .	rosy blush, salmon centre.
<i>Grandiflora nivea flore-pleno</i> ,	lemon blush.
<i>General Bertrand</i> , . . .	peach.
<i>Gloria mundi</i> , . . .	pale rose, citron centre.
<i>Humea alba</i> , . . .	cream and rose.
<i>Lilacina superba</i> , . . .	rose, lilac, and saffron.
<i>Nivea plenissima</i> , . . .	deep crimson.
<i>Potsii</i> , . . .	crimson.
<i>Potsii plenissima</i> , . . .	deep crimson.
<i>Queen Victoria</i> , . . .	delicate blush, and lemon centre.
<i>Reine Hortense</i> , . . .	rose, centre white.
<i>Rosea plenissima</i> , . . .	deep crimson.
<i>Sulphurea superba</i> , . . .	sulphur.
<i>Smouthii</i> , . . .	crimson.
<i>Tenuiflora</i> , . . .	crimson.

For a fuller list of these most showy plants we must refer to Mr. Salter's (of Hammersmith) catalogue. He has devoted great attention to herbaceous Pæonies. It will be observed that those named give a variety of colours—from the most delicate tints to the deep crimson of *P. Potsii* and others.

‘In gardens where there is abundance of room, we would strongly deprecate the arranging of the Pæonies in beds or masses,—we would put them in conspicuous positions in mixed flower borders, either singly, or in groups of threes of contrasted colours. According to our experience they flourish best in a light rich soil, formed from decomposed turf. They do not thrive well in exhausted garden soil, such as is frequently met with in mixed flower borders. In irony gravel, or soil chiefly composed of it, they will not flower at all.

‘The flower-stalks should be carefully staked before their own weight or summer rains bring them to the ground; at the same time, the stalks without flower-buds should be cut away, and the superabundant foliage removed. When the plants are left in a littery prostrate state, many of the flower-buds never open. As there is a tendency in the stalks to multiply at the crown of the roots, and so to spindle and become barren, we would recommend that the plants should be lifted and divided every five or six years, trenching the soil, and adding some turfy soil and half-decayed leaves. The strongest roots with two or three eyes should be re-planted at once, and the weaker taken and put in rows in reserve ground, where, after a season or two, they supply neat plants for further decoration.’

SHRUBBY PÆONIES.—*Pæonia Moutan* and *P. papa-*

veracea are the old and well-known varieties of this magnificent plant. A number were brought home direct from China by Mr. Fortune, and many more have been originated on the Continent. Unfortunately, our nurserymen have not adopted the Chinese method of propagating them by grafting on the tubers of *P. albiflora*. They generally use stocks of *P. Moutan*, and the stock soon gets the better of the graft. Plants on their own roots, when procurable, are to be preferred. They succeed perfectly in good, hearty, substantial loam, but become stunted in poor, dry, sandy soil. In early places their long succulent shoots, which are put forth rapidly, require a slight protection from frosts in spring. They may be seen, however, in elevated localities, even as high as 400 feet above the level of the sea, passing the winter totally unprotected, and with complete impunity. Where they grow vigorously, they afford a wonderful blaze of colour in the end of May or the beginning of June. This flush of beauty seldom lasts more than ten or fourteen days, and is easily tarnished by rain.

Tree or Moutan Pæonies—Pæonia papaveracea, the single variety, and type of the species.

Alba lilacina,	. . .	large, double, white violet base.
Athlete,	. . .	very large, double, delicate lilac.
Bijou de Chusan,	. . .	large, nearly double, light purple.
Blanche du Chateau Futu,	. . .	pure white, some petals striped purple.
Carolina,	. . .	double, salmon very clear.
Charles Rogur,	. . .	double, good shape, white.
Colonel Malcolm,	. . .	double, clear violet.
Comte de Flandres,	. . .	very large, and double, bright rose.
Confucius,	. . .	double, dark rose striking.
Cornelia,	. . .	very large, double, violet.
Elizabeth,	. . .	poppy red, very large, and double.
Emilia,	. . .	double, tender carnation.

Farezzi,	very large, double, lilac white, base violet.
Fragrans maxima plina,	double, soft rose ; very fragrant.
Hippolyte,	double, beautiful white rose.
Imperatrice Josephine,	very large, and double, lilac rose ; fine.
Lactea,	double, pure white.
Lambertinae,	double, white-spotted violet.
La Ville de St. Denis,	very large, double, clear rose.
Leopolda,	double, good shape ; fragrant. [grant.
Louise Mouchelet,	very large, and double, clear rose ; fra-
Madame Stuart Low,	large, double, brilliant salmon red.
Morris,	rose, spotted with violet.
Odorata Maria,	double, good form, soft rose.
Osiris,	semi-double, dark purple.
Prince Troubetskoy,	very large, double, dark lilac.
Ranierii,	very large, double, bright amaranthe.
Rienzi,	very large, and double, beautiful bright
Rosea Eliarsii,	double, bright carnation. [rose.
Rosea Mundi,	large, very double, clear salmon.
Rubra odorata plenissima,	very large, double, lilac rose.
Samarang,	semi-double, red, base of petal black.
Souvenir de Madame Knon,	very large, double, white-tinted carmine.
Triomphe de Malines,	large, clear violet, base darker.
Triomphe de Vandermaelen,	very double, beautiful, rosy violet.
Vandermaelii,	large, double, white, slightly rose at first.

AQUATICS OR WATER PLANTS.—There are few gardens in which there is not a piece of water, however small ; but in many instances, instead of being either useful or ornamental, this is allowed to become a cesspool of malaria and rottenness. The great mistake committed in introducing small pieces of water into small gardens, is the formation of them in places where they are exposed to the full sun all day long. This is sure to produce scum and rottenness, unless the supply of fresh water be constant and in considerable quantity. If, instead of forming such ponds in fully exposed situations, they were situated in partial shade, and a supply of water, however small, constantly kept up from even

a tap, they would always be fresh and beautiful; and when planted with suitable plants, and stocked with some gold and silver fish, they form one of the most interesting features of a garden.

To all who want to learn the full particulars of the aquarium, both indoors and out, we would strongly recommend the *Book of the Aquarium*, by Mr. Shirley Hibberd, editor of the *Gardeners' Magazine*, who has the rare gift of interesting with his pen, while he gives substantial instruction.

List of Select Aquatic Plants.—In no section of ornamental plants do we see more worthless weeds included than in this. Looked at from a horticultural point of view, there are not a great many that are worth cultivating; and as this selection is intended for the smaller gardens, in which much extent of water is impracticable, it is intentionally limited, and embraces good flowering plants only.

Aponogeton distachyon: One of the very sweetest of plants—may be seen abundant in a pond in the Edinburgh Botanic Gardens.

It is a great ornament to a fountain basin—rather tender.

Butomus umbellatus: The flowering rush—too well known to require remark; pink.

Caltha palustris—Marsh Marigold: This is common, but too showy to be omitted. There is a double variety, also very beautiful—excellent for the margins of water.

Calla palustris: Very pretty and distinct—in all respects a first-class mud or aquatic plant, and sends up its little miniature lilies of the Nile all along the length of its trailing stems, and just high enough to be seen over the bright, shining, green foliage.

Hottonia palustris—the Water Violet: Is exceedingly pretty when well managed. It thrives best on the surface of soft mud, which it greens over as if covered with moss.

Menyanthes trifoliata—the common Bog Bean: This is a much neglected but lovely native plant. Every piece of garden or park water ought to have some of their parts fringed with it.

Sparganium ramosum—Burr Reed : A tufted-looking plant, which bears burr-like heads of fruit.

Orontium aquaticum : A somewhat rare but exquisite aquatic of the Arum tribe, and more interesting than most of them that are hardy. The side of a pond or fountain-basin is best for it. It should be carefully attended to till well established.

Nuphar advena : A bold and valuable water-plant.

We need scarcely enumerate the beautiful British White Water Lily—that is almost sure to be known and grown by all possessed of a garden ; and so probably is the yellow.

Nuphar lutea—Yellow Water-Lily : There are two smaller species worth a place—*Nuphar pumila*, and the smaller form of the *Nymphæa*.

Lythrum roseum superbum is a most showy plant, and flourishes amazingly when planted by the sides of water, and also as a border plant. Where anything like effective bloom is sought by the sides of water, it is very effective.

Pontederia cordata : A stout and perfectly hardy blue flowering aquatic.

Potamogeton fluitans : The floating pond weed.

Villarsia Nymphoides : A fine yellow aquatic, which makes the surface of the water quite gay with flowers when the sun is out.

Sagittaria latifolia : Among the very best water-plants. When well grown it is more like a double white rocket than anything to which it can be compared, only that the blooms, though individually larger than the rocket, are not so closely set. It likes a mud bottom, and forms tubers the shape and size of pigeons' eggs.

In planting aquatics, a good plan is to tie a piece of turf round the roots, and drop them into the water, to the bottom of which they sink, and establish themselves in the mud deposited there.

CHAPTER IX.

SPRING FLOWERS.

To some extent the present style of summer and autumn flower-gardening has been built up and carried out on the ruins of spring flowers. The great numbers of half-hardy and tender plants suitable for summer display that have to be propagated and cultivated, has led in most instances to the neglect, to a great extent, of those hardy plants that are adapted to beautify the parterres in spring. It would, however, be difficult to say that any absolute reason exists why this should be so. The care which the one set of plants necessitates, does not necessarily become a reason why the other set should be neglected. There can be no doubt that the fact of the most opulent and fashionable families being, in the majority of cases, away from their country seats in the spring and early summer, has been the chief means of directing the efforts and attention of gardeners to the crowding of as many flowers into the autumnal months as possible. Hence the eagerness with which every plant that blooms profusely, or is remarkable for its foliage during that time of the year, has been craved for and cultivated in tens of thousands. And hence, also, one great reason why spring-gardening has been neglected. This example, set by the leaders of society, has exercised a wonderful influence on the owners of

smaller gardens, and they, too, have paid less attention to spring flowers than they ought to have done.

Of course there is nothing that could justify the gardener, except an express command, in devoting his resources and energies to the decoration of the flower-garden during the time that his employers are absent. His interest lies in bending all the ingenuity of his mind to the making of the garden most gay and interesting, either in spring, or in summer or autumn, or both, as his employer may wish, and allows means for. Depend upon it, the interest of gardeners lies here. This does not apply to a large class, for whom especially this work is intended — such as business men, and amateurs who derive so much healthy relaxation to both body and mind from their gardens all the year round, and who, if they leave their villas for a season, do so in autumn.

A reaction in favour of spring flowers in selections is now taking place, and nurserymen find it to their interest to get up lists of them, and are beginning to find a brisk trade for them. Where the families are resident in spring, the beds and borders are now, in increasing instances, not left empty all the winter and spring. The result has been nothing less effective than Flora's ample spring stores of beautiful objects would warrant any one acquainted with them to expect. It is not necessary to grow a vast number of species and varieties to produce a beautiful, if a less imposing, effect in spring as well as in summer. But in respect to variety, and taking annuals and bulbs into consideration as well as hardy perennials, spring enfolds perhaps more beauty and variety of form than does the glow of autumn in plants suitable for beds and borders. And it need scarcely be

said that plants, to be available for flowering in March, April, and May, must of necessity be perfectly hardy, and, for this reason, within the reach of the humblest amateur who commands a few square yards of a flower border, even if he has not so much as a common garden hand-glass. Such can make their garden gay more easily, and at less expense, than it is possible to do in summer and autumn with half-hardy plants. Moreover, spring flowers are nearly all so exceedingly easy to cultivate well, that they are in this respect also within the reach of the great majority, much more so than the class of plants so largely cultivated for the parterre in summer. On this account alone, it is exceedingly desirable that the cultivation of, and taste for, spring-flowering plants should be encouraged. They are peculiarly the flowers for the million. We can hardly agree with those who have affirmed that flowers are in many cases the *mere toys* of the rich, but can conceive how they may become something like friends and comforters of the lowly, and produce in the mind, many times, the feeling which fortified the spirit, and strengthened the nerves and hopes of the lonely desert wanderer, when he let his eye rest on the desert moss. The authoress of *The Life of Hedley Vicars* showed how well she understood the influence of the love of flowers upon the human heart, when she placed a posey on the plate of each navvy when he sat down to her tea-meetings at Beckenham. These 'floral apostles' come to us in spring especially, ministering almost human sympathy; and it is sincerely to be desired that their cultivation should be extended and encouraged among all classes.

If means are in any case circumscribed, and, in such circumstances, the filling of a whole parterre of consider-

able extent with spring-flowering plants cannot comfortably be accomplished in that order and variety which an ambitious mind desires at once, a compromise should be made. By this I mean to convey, that from the variety afforded by annuals in conjunction with such other plants that are easily procured and very rapidly increased, such as Daisies and Pansies, and with the aid of cheap bulbs, such as Crocus and Tulips, a very gay spring parterre may be attained in a very short time; and by degrees other plants more difficult to procure, and tedious to increase, can be increased. In fact, the same chance afforded in autumnal flower-gardening is equally to be commanded in spring. Some twenty years ago I was required to get up a spring display suddenly, and I planted the flower-garden with a variety of free-growing Pansies and a few other things, and the effect in April and May was very fine. This is referred to by way of encouraging those who wish for spring flowers to make the attempt with common things in quantity at first. The little spring-gardening that I have done here has not been imposed on me by the wants of my employers, but I am willing to confess, that small as it is compared to our summer and autumnal display, I have derived great pleasure from it. And I am pleased to think that from the example set, amateurs and cottagers around are making their gardens gay in spring with Pansies, Daisies, etc. etc.

As will at once become apparent to the inexperienced by the lists that are furnished, there is no lack of spring-flowering plants available for all classes. There is a rich and most beautiful fund in common bulbous plants alone. Such things as Hyacinths, Tulips, Crocus, Nar-

cissus, Scillas, etc., need only be named to make this evident. From the cultivation of the hardy Scillas we can testify from experience that much interest arises. Hardy Annuals and Biennials can be raised easily and rapidly; and these alone, in combination with a few varieties of Pansies, to say nothing of Perennials, afford a considerable amount of variety, and sufficient in colours for most effective combinations. The odour and lively tints of some of these plants are peculiar to themselves. And though we may not be able to point to the dense massiveness of the scarlet Pelargonium, the Verbena, and the Calceolarea, as available for autumn, spring can boast of more delicious odours, and far more delicacy and variety of tints. True, spring cannot boast of the lovely foliage of the Mrs. Pollock and Lucy Grieve Pelargoniums, but there is the golden Arabis, which always puts on its best dress towards winter. Spring is certainly deficient in, though not destitute of, dark-foliaged plants; for there is the dark-leaved Ajuga, and in silver variegation there are the variegated Arabis and Euonymus radicans variegatus, as well as the variegated Ivies and Periwinkles, the beauty of which is most conspicuous in winter and spring, while trees are leafless. Time will not fail to make good these seeming deficiencies; and in the meantime it cannot be said of spring that, from lack of variety, it does not encourage the lovers of flowers to drape their gardens with the loveliest hues, and perfume the air with the most refreshing odours in spring, as well as in autumn. But instead of balancing the adaptability of the two classes of plants for producing beautiful combinations, the various capabilities of spring-flowering plants will be adverted to individually, as they are treated of in detail.

I will only further say, for the encouragement of all owners of gardens who reside at their places in spring, that, for sweetness and chasteness of effect, many of the spring combinations far surpass those of autumn, and that many of the spring colours are as brilliant—and some much more so—as any that autumn can produce. What can surpass the purples of the Pansies, the yellows of the Alyssum and Cheiranthus, the Tulip and the Crocus? And in deep bright blues the Scillas, the Gentians, and Forget-me-not stand unrivalled. Then there are the white Pansies, Daisies, Forget-me-not, etc., that are scarcely rivalled for whites by the popular favourites of the autumn parterre. The Anemone affords scarlet of the most vivid kind, although, as beds for general effect, not equal to the scarlet Pelargoniums. I will now proceed to treat of the various plants in detail, and, to be comprehensive, will deal with Annuals as a whole; for their management is so nearly alike, that to treat of them individually is not necessary.

ANNUALS.—In selecting a border on which to sow Annuals, one with an east or west aspect is preferable to one having a south or north one. The south is too scorching, and on the north they are sure to become drawn and tender. To avoid a gross growth, the soil should be rather poor than rich. A moderately light free-working soil is the best; and if shallow digging is to be recommended in any case in flower-gardening, it is in that of sowing Annuals, to be transplanted with balls and as fibry roots as possible. If the ground is open and well-worked to a great depth, those varieties which have a tendency to make tap-roots will have the more encouragement to do so, and their removal to the

flower-garden beds and borders in autumn, with balls and fibry compact roots, is rendered more uncertain. A well-worked staple of about 6 to 8 inches, resting on rather a solid or firm subsoil, is more likely to produce compactly surface-rooted plants.

The sowing of Annuals is as simple as the sowing of a bed of cabbage. They can either be sown broadcast in beds, where a great quantity is required, or the ground can be divided into 4 or 5 feet beds, and then drills drawn lengthwise in the beds at 3 to 4 inches apart. It is much better to take up an extra space than to sow too thickly on a smaller. Should the weather be dry at the time of sowing, a good plan is to give to the bed a soaking of water the evening previous to sowing, and after sowing, to cover with fine moderately moist soil. The smaller seeds should be covered a quarter of an inch, the larger half an inch, and larger seeds, such as Lupins, an inch deep. If the weather be very scorching, a few evergreen boughs laid over the beds will prevent rapid evaporation, and the vegetation is more like to be regular and healthy. Especially is this applicable to the Forget-me-not, which is naturally fond of moisture. Indeed, though this lovely spring bedding plant flowers very well by being treated the same as the other Annuals, it flowers more vigorously when two years old.

As in the case of all Annual sowing, slugs must be looked after as soon as the seedlings appear above ground; but these enemies are not so troublesome in the case of autumn as in that of spring sowings. At whatever time or for whatever purpose Annuals are cultivated, they should never be allowed to spoil from crowding; and if in any case this is likely to occur to a serious extent before transplanting time, the beds should be looked

over and thinned. When any plant runs up speedily from overcrowding, it suffers serious injury, from which it seldom entirely recovers.

Where room could be afforded, the strong tap-root producers, which are apt to grow too gross, especially in damp seasons, and become difficult to transplant with safety, would be best sown in pots, and kept in an open airy situation, where they could grow dwarfer, and could be transplanted with balls without receiving a check. The whole of these Annuals can be successfully cultivated for spring-blooming, by sowing in heat in small pots in January, and after being properly hardened off, planted out in February, weather permitting. But gardeners and amateurs have always so many other things demanding space under glass at this early season, that it is desirable to sow in autumn, and have recourse to early sowing to make up gaps that may occur in the course of the winter.

In cold damp localities I would recommend a more limited use of Annuals than in more favoured places. There are so many perfectly hardy things, among which Pansies must take a first rank, that the greater proportion of spring flowers may consist of Perennials and hardy bulbs, unaided by anything requiring to be raised from seed, except a very few. The most hardy Perennials proper afford sufficient shades of colour to make the flower-garden very beautiful in localities where there is nothing extraordinary in either the soil or climate. Some of the Annuals are, however, so hardy and so beautiful—such, for instance, as the Forget-me-not—that they need never be dispensed with on the score of uncertainty.

As there are but few Biennials that flower sufficiently

early to make them suitable for spring-gardening, I will not treat of them separately, but will class them along with Perennials.

Annuals most suitable for Beds in the Spring Flower-Garden.

		Feet.	Colour.	Time to Sow.
**	Alyssum maritimum, . . .	$\frac{3}{4}$	White.	Middle of August.
*	Bartonia aurea, . . .	1	Orange.	Do.
*	Calandrinia speciosa, . . .	$\frac{1}{2}$	Rose.	End of August.
**	Calandrinia umbellata, . . .	$\frac{3}{4}$	Crimson.	Do.
**	Candytuft—white, purple, } and crimson, . . . }	1	...	Middle of August.
**	Collinsia bicolor, . . .	1	Purple & white.	End of August.
**	Collinsia grandiflora, . . .	1	Purple.	Do.
**	Collinsia verna, . . .	1	Blue and white.	Do.
*	Erysimum Peroffskianum, . . .	$1\frac{1}{2}$	Yellow.	Do.
*	Eschscholtzia Californica, . . .	1	Yellow.	Beginning of July.
*	Eschscholtzia crocea, . . .	1	Orange.	Do.
*	Eutoca viscida, . . .	1	Blue.	Middle of August.
*	Gypsophila elegans, . . .	$\frac{1}{2}$	Pink.	Do.
**	Lasthenia Californica, . . .	1	Yellow.	End of August.
***	Limnanthes Douglassii, . . .	$\frac{1}{2}$	Straw colour.	{ Do., or early in September.
...	Limnanthes sulphurea odorata, . . .	$\frac{1}{2}$	Yellow.	Do.
**	Lupinus nanus, . . .	$\frac{1}{2}$	Blue.	Middle of Sept.
**	Lupinus alba, . . .	$\frac{1}{2}$	White.	Do.
***	Myosotis arvensis, } (Forget-me-not). }	1	Blue.	Middle of June.
***	Myosotis arvensis alba, . . .	1	White.	Do.
***	Nemophila insignis, . . .	$\frac{1}{2}$	Blue.	End of August.
*	Nemophila atomaria, . . .	$\frac{1}{2}$	White spotted.	Do.
***	Saponaria Calabrica, . . .	$\frac{1}{2}$	Rose.	Middle of August.
***	Saponaria Calabrica alba, . . .	$\frac{1}{2}$	White.	Do.
***	Silene pendula, . . .	1	Pink.	{ Middle or end of July.
...	Silene pendula alba, . . .	1	White.	Do.
**	Virginian Stock, red and white.	$\frac{1}{2}$	...	End of August.
*	Venus' Looking-glass, . . .	$\frac{3}{4}$	{ Blue, yellow, and white.	Do.

The whole of these are effective for beds, lines, and edgings, but some are much superior to others, and their order of merit is shown by the asterisks affixed to each: * good, ** better, *** best. Where the garden to be decorated is of medium or only small size, the best only are to be recommended; but the whole, as well as those marked for autumn-sowing in a former list, are useful for mixed borders.

Hardy Perennials and Bulbous-rooted Plants.—The

general remarks which have already been made on this class of plants as applied to their growth as mixed border plants, do not apply with sufficient minuteness to their management when grown in masses in beds and borders from which they require to be removed annually, to make way for summer and autumn flowering plants. Although their culture is happily so easy, and requires no expensive appliances, it is nevertheless necessary that at least each genus should be treated of separately, and the particular capabilities of some of the species and varieties pointed out. This I will now attempt to do in as condensed and simple a manner as I can, and hope that the veriest tyro may be able to see that a flower-garden, border, or bed, need not be destitute of floral beauty during the spring months.

Ajuga (Bugle) *reptans rubra*, 4 inches, crimson foliage—Nov. to May.

A native of Britain, and a very effective plant all winter and spring, and being a low-growing plant, covering the ground with a dense foliage of dark copper or almost crimson colour, it is most useful for ground-works, or for lines and edgings associated with plants that have yellow or white flowers or foliage, such as *Cerastiums* and golden *Arabis*. It thrives well in any ordinary garden soil. All attempts to produce flowers should be checked by removing them at once, for, like most other plants, if allowed to bloom, the foliage is not so fine. When removed from the beds, it should, if possible, have a moist shady place allotted to it, as it likes moisture. It can be very rapidly increased, as it creeps along the ground, and makes roots at every joint; and every morsel with a root, if divided in June, makes a fine plant for autumn planting.

Alyssum saxatile, 9 inches, yellow—April and May.

Alyssum saxatile variegatum, 9 inches, yellow—April and May.

Alyssum compactum, 6 inches, yellow—April and May.

Alyssum argenteum, 9 inches, yellow—April and May.

These are among the most beautiful and lasting yellow spring-flowering plants that can be grown, and the most easily managed, requiring nothing peculiar in the way of soil. They are very tenacious of life, and, consequently, bear removal well. The same plants may be used for a number of years, but it is most vigorous when three to five years old from the cutting. Still large old plants go a long way in covering the ground, as their longer limbs can be spread out and pegged. Cuttings taken in June and July, and put into light soil behind a south wall, and without any covering of glass, root freely. Short healthy cuttings from about the lower parts of the old plants, just pulled off with a heel, are the best. Make them firm in the ground, and give a watering immediately they are put in. *A. saxatile variegatum* and *A. compactum* grow more compact than *A. saxatile*; and they can be increased very easily by taking moderate-sized plants, that sit, so to speak, close on the ground, and splitting off each limb, with a piece of root attached. Summer-struck plants make fine, compact, little plants for small beds, edgings, and lines, but do not flower quite so freely as older plants.

When they are removed from the beds, all the flower stems should be removed; and if they attempt to flower early in autumn, the bloom should be removed, as their flowering at that season only tends to exhaust the plants. *A. saxatile variegatum* is chiefly useful for its variegated foliage; and to *A. argenteum*, which has a light grey foliage, a similar remark applies. They, however, are

effective enough as yellow flowering plants, but the light green leaved variety of saxatile is the strongest and best bloomer. They are also excellent rock-work and basket plants. *A. montanum* Olympicum and *A. intricatum* are recommended by some; but I am not sufficiently acquainted with them to speak positively for or against either of them.

Adonis vernalis, 6 inches, yellow—March and April.

This is a lovely little spring favourite. Its flowers are of a clear yellow colour, about as large as a penny piece. It thrives best in a loamy limestone soil, but succeeds very well in ordinary loamy soil. Its management as to propagation is so simple that little need be said about it, beyond that it is effected by dividing the tufts into as many pieces as can be had with roots, and planting in moderately rich soil, and watering for a while in dry weather, till they get hold. The division should take place as soon as the blooming season is over.

Anemone Apennina, 9 inches, blue—March and April.

Anemone nemorosa flore-pleno, 6 to 8 in., white—March and April.

Anemone vernalis (new), 6 inches, white—March and April.

Anemone coronaria, 9 to 12 inches, various—March to June.

Of all the diversified forms of floral beauty which can be used for adorning the garden in spring, few excel the *Anemone*. Its flowers, of the most brilliant and varied hues, and elegant foliage combined, render it a most useful plant for spring decoration. The hybrids and varieties of *A. coronaria* are numerous and beautiful, embracing self-colours of brilliant scarlet, rose, blue, purple, violet, etc., as well as spotted and striped varieties without number. The self-colours are most

effective in groups and lines, and all are beautiful for mixed borders. The double varieties, though larger, are of course more expensive to buy, and do not last quite so long in bloom as the single varieties; but they are so exceedingly beautiful that no garden should be without them where spring flowers are required. But let us even take *A. Apennina* (the Mountain Anemone) with its vivid blue flowers, almost as big as a crown piece, and which sometimes flowers so early that we have it forming a carpet of blue simultaneously with the Crocus and the Snowdrop, and so hardy that it can be planted anywhere, although it and *A. nemorosa* likewise do best in a shady place, where the roots can remain undisturbed. I believe there are some beautiful new ones besides *A. vernalis*, such as *A. palmata*, with deep golden flowers; but I have not seen them, and cannot speak of their merits. *A. hortensis* might be supplemented. It has large flowers, with narrower and more numerous petals than the varieties of *A. coronaria*.

The best soil for the Anemone is a deep sandy loam, well pulverized and manured with rotten cow or horse manure. For early spring-flowering, the tubers should be planted in October, and for flowering late in spring and early summer, February and March is soon enough. We have a great dislike to the system of so thoroughly drying the roots, as is the case when they are purchased, and would recommend their being laid in moderately moist sand for a time, or till they begin to move, before finally planting them; because, if put into the ground, and wet weather occur, they rot off in large quantities after being so dry. In planting them, the simplest way is to open drills with a hoe about $2\frac{1}{2}$ inches deep,

placing a half inch of fine sandy soil in the drill, then the roots, and then fill up with light sharp compost. To have good beds, they should be planted 6 inches by 4. The Anemone does not bear transplanting well; and where it can be done, they should be left in the beds or borders, and only lifted occasionally and divided, if increase of tubers is desired. In cases, however, where the beds have to be filled for summer and autumn show, they must be lifted; and when they cannot be removed with balls and watered to keep them fresh for a time, it is best to leave them till they are pretty well ripened, and then lift them, and not to dry them by any means, but to store them in light rather dry soil, till required for planting in October again.

I have frequently raised quantities from seed, and this is a good way of increasing stock rapidly. The seed should be gathered when dry, and sown, immediately it is gathered, in light rich soil, covering about half an inch deep, and shading with a mat or evergreen boughs till the young plants appear, many of which will flower the following year; so that by this means, and division of the roots, stock can be quickly worked up.

Arabis albida, 9 inches, white—February to May.

Arabis albida variegata, 9 inches, variegated foliage—Feb. to May.

Arabis mollis, 9 inches, white—February to May.

Arabis mollis variegata, 9 inches, white—February to May.

Arabis lucida variegata, 6 inches, golden foliage—Feb. to May.

Whether we regard the *Arabis* for their very early and profuse show of white flowers, or for the lovely variegation of the foliage of the variegated sorts, they must be looked upon as indispensable in spring decoration, and they are as suitable for the rock-work or stump of an old tree as for the richest borders. Indeed the varie-

gation of the foliage is not improved by richness of soil, but the reverse. Nothing can be more lovely than *A. lucida variegata* as an edging or long line when backed up with some dwarf blue plant. I have heard of one called *A. cærulea*, a new species from Switzerland, with glossy green leaves and blue flowers, which, if it blooms in spring, as I apprehend it will, must become a favourite. They are all most useful plants for the amateur who has not the command of much glass, especially those with variegated foliage, as they are most effective in summer as edging plants, as well as in winter. The variegated sorts should not be allowed to bloom when grown for their foliage, as they never make fine foliage if allowed to exhaust themselves with a crop of bloom. When used for both summer and spring gardening, they require only to be lifted every third year or so. If left much longer, *A. mollis* and *A. albida* (which are very much alike) become rather large and clumsy, and in wet winters are apt to damp off.

Their propagation and culture are very simple: it only requires that the old plants be taken up and pulled to pieces, when each individual tuft, with about 3 inches of the stem to hold it well in the ground, will soon make a plant, if run out like box into lines in ordinary garden soil. If a little rich sandy soil is put about the necks of the pieces, all the better. Edgings that have stood all summer, and are too large for the winter arrangements, can be thus lifted and dibbled in thickly in October, and they root through the course of the autumn, and make nice spring edgings. Such as *A. mollis variegata* are not so likely to suffer from damping in a severe or wet winter when thus divided as when left *en masse*. They stand any amount of cold. The best time to

divide *A. lucida* is in May, unless it can be done early in autumn. It being so short-necked, the winter frosts are apt to throw it out before it gets hold. Divided in autumn and covered with mats during frost, it roots well, and can be planted in March.

Aubrietia Campbellii, 6 inches, bluish purple—April to June.

Aubrietia deltoides, 6 inches, bluish lilac—April to June.

Aubrietia deltoides grandiflora, 6 inches, bluish lilac—April to June.

Aubrietia purpurea variegata, 6 inches, purple—April to June.

These are amongst the neatest and prettiest dense dwarf-growing spring flowers that can be used, especially in dry gravelly soil, which they will cover with a dense carpet of foliage and flower for two or three months. *A. Campbellii*, particularly, is of a very bright and pleasing colour. *A. purpurea variegata* is also a remarkably pretty plant, especially for covering a dry bank, where its variegated foliage and purple flowers are seen in beautiful contrast. They are all very hardy, and can be as easily increased as the *Arabis*, and in the same way. They are more spreading, and often root on the ground. *A. deltoides grandiflora* is excellent for planting on rock-work, where it grows into dense sheets of blossom.

Bellis perennis (Daisy), 6 inches, various—February to June.

Bellis perennis, double red, 6 inches.

Bellis perennis, double white, 6 inches.

Bellis perennis, double pink, 6 inches.

Bellis perennis prolifera, 6 inches.

Bellis perennis aucubæfolia, golden var. fol., with crimson flowers.

These varieties of the common double Daisy are of great service in the spring garden. For small beds, and especially for long lines and edgings, they are, from their compact even growth and wondrous powers of

dense and long-sustained bloom, unique. They are the most easily managed plants imaginable, as they will grow in any soil, bear transplanting remarkably well, and are capable of being increased with great rapidity. The double white and double red are the most telling varieties when viewed from a distance; for although the golden-leaved variety is exquisitely beautiful in spring, winter, and autumn, it does not bloom so freely as the plain-leaved ones, but when seen close at hand it is a charming plant. Like all other fine-foliaged plants, when grown expressly for its foliage, it will be finer if the blooms are kept picked off; but we are very partial to it when allowed to flower.

To speak of the cultivation of the Daisy may be considered superfluous,—it will not puzzle even the greatest tyro. It will grow in dry soil, but will yield finer foliage, and blooms too, and for a longer time, in well enriched soil. They should be planted thickly, whether in rows or in beds, so as to form a mass. They are increased by dividing them after the blooming season; and for the summer the place where they are planted should be rather shaded, especially for the variegated sort. When it is required to get up stock quickly, they should be divided in spring, and planted on light rich soil. Every morsel that can be had with root, if kept well watered in dry weather, will make a fine plant by midsummer, when they can, if necessary, be lifted and divided and planted again; and with the same treatment and a little shade, they will make fine plants for transplanting in October.

Bulbocodium vernum, 6 inches, dark purple—March.

Bulbocodium vernum foliis-striatum, 6 inches, striped leaves—
March.

This is a very pretty crocus-looking bulbous-rooted plant, requiring very much the same treatment as the Crocus. It should be planted near to the edge of beds and borders, so that the summer plants can be put in without disturbing it, as it increases and altogether does best when allowed to remain undisturbed. The striped-leaved variety is nothing extra as a foliaged plant, but it is pretty, and worth growing as a variety.

Cardamine pratensis flore-pleno, 12 in., pale purple—Mar. and Apr.

Cardamine trifoliata, 9 inches, white—March and April.

The first named of these is a double variety of a pretty British plant (Cuckoo Flower or Ladies' Smock), which grows in moist meadows and watery places. Its corymbs of pale purple are very pretty. *C. trifoliata* is also a lovely plant, with dark green foliage and heads of snow-white blossoms. They are both very easily managed plants, and can be increased very rapidly by dividing and re-dividing, as recommended for the Daisy. Being partial to moisture, they should be placed behind a north wall for the summer, and kept moist, especially if divided for propagation. They should be thickly planted to produce a mass. A rather retentive loam suits them best; but they thrive in ordinary garden soil, well manured.

Cerastium tomentosum (Snow-in-Summer), silvery grey.

Cerastium Biebersteinii, silvery grey.

So popular is *Cerastium* that it would be difficult to find a garden without it, and where absent, there is a great blank. For ground-works, for panelling, and for dotting with other plants, it is superb; while, for edgings and long lines, it has no rival as a dwarf, dense, effective, and easily managed plant. If planted afresh every spring in the way recommended for summer-

gardening, and kept nicely trimmed, it remains effective and close in the nap the whole winter; and where a sheet of white blossom is required in May, there are not many things to surpass this simple plant. It may frequently, however, become necessary to move it along with the autumn-flowering fraternity, and in that case I would recommend a quantity of it to be struck in August, by being simply torn from the summer stock, which frequently wants trimming, and run out into lines like Box behind a north wall, in light rich soil. By the middle of October it is in fine order for transplanting, and in spring makes far fresher lines and masses than old stock that has been moved in autumn. Of the two named, I like *C. tomentosum* the best, but both are good; and associated with blue, purple, and dark foliaged plants, they are very effective, or with yellows or oranges, as harmonies, they are very sweet. When planted as ground-works for panels of blue and purple Pansies, and edged with red Daisies, they are also most effective.

Cheiranthus alpinus, 4 to 6 inches, bright yellow—Mar. to June.

Cheiranthus Marshallii, 9 inches, orange yellow—April to June.

Cheiranthus ochroleucus, 12 inches, pale yellow—April to June.

Cheiranthus cheiri, 12 to 18 inches, various—April to June.

Cheiranthus cheiri, double, yellow—April to June.

Cheiranthus cheiri, double, purple—April to June.

Cheiranthus cheiri, double, red—April to June.

The name Wallflower is suggestive of delightful perfume, as indeed are many names that are famous for gay flowers in spring. Wallflowers are both effective to the eye and most pleasing to the sense of smell. They are old-fashioned flowers, upon which we have known the amateur to bestow great attention, particularly the doubles, which are by some considered difficult to

strike. A good many years ago we gave a good deal of attention to these and Sweet William, and had a fine collection; but few are very effective for massing, for which distinctness of colour is a requisite. As is the case with nearly all flowers, single varieties are most telling for bedding; for although the doubles are in themselves exceedingly beautiful, the singles are more effective, and, moreover, more sweet. What can be better as a yellow flowering plant than the yellow single variety of the common Wallflower or *C. Marshallii*? *C. alpinus* is very effective too, and being so dwarf, it can be used for small beds, scroll borders, and edgings.

Having already made some remarks on the culture of Biennials—Wallflowers included—it is not necessary here to say much about raising the single varieties. The process is so simple that few can fail to raise them in quantity. The chief point in the culture of Biennials is to sow early, and transplant into nursery rows before the final planting, as is described under the head of Biennials, to which the reader can refer. If fine bushy plants are expected before the middle or end of October, the seed should be sown not later than the middle of May; the seedlings transplanted before they become crowded and drawn; and after they have begun to grow in the nursery rows, go over them and top them. This has the effect of causing them to be more compact and dwarf, and is another reason for sowing early. The propagation of the double varieties must of course be effected by cuttings. The error into which many fall who cultivate these as border flowers is, that they delay the putting in of the cuttings till too late, and as they take a long time in rooting, the season is over before the young plants can be established; and on selecting the cut-

tings a good deal depends. The young shoots should be selected not later than the middle of May, if good plants are to be had the first year. A firm short cutting, not wiry and hard, but moderately firm, should be pulled from the parent plant, not cut. The heel should then be cut smooth with the knife and a few of the leaves removed, and it is ready for insertion. I am aware that where a large stock is required, longer cuttings must not be passed by,—they must be shortened, so that the portion of the stem inserted in the ground should be moderately firm. In putting in these two sorts of cuttings they should be classed, as they sometimes do not strike simultaneously. To strike with the greatest success, a raised bed of soil should be formed, and 6 inches of equal proportions of light soil—loam, if possible—and leaf-mould and sand, sifted finely and beat firmly over the top. Hand-glasses or a frame is a great advantage, where such means can be commanded ; but they are not indispensable, for the cuttings will strike without them, though much more apt to suffer before they begin to callous over. The cuttings should then be firmly dibbled in about 2 inches apart, watered, and allowed to dry before the glass is put on. A shady place, such as behind a wall, where they will not require to be shaded by mats, is best. In the day-time, when the weather is hot and sunny, keep the glasses closely on, but put on a little air at night. When they have calloused, they will begin to grow, and soon root, when they should be transplanted into well-manured and rather sandy soil. In this way the whole of the single varieties can also be increased, including *C. Marshallii* and *C. ochroleucus*. We have seen cottagers strike the double varieties in large flower-pots filled half full of road grit and soil

mixed together, placing the pot in a shady window or other place, and covering its mouth sometimes with a pane of glass.

The Wallflower, though it will grow on the top of an old wall, does best in a rather rich, dry, loamy soil, but is not by any means fastidious. When planted finally, they should be moved with balls, which is more easily done when they are transplanted in the seedling state than when left in the seedling bed till autumn.

Corydalis tuberosa, 8 inches, purple—March and April.

Corydalis nobilis, 16 inches, yellow—April and May.

These two plants, though they do not make a very conspicuous show, are very elegant, taken as a whole. *C. nobilis* is a very effective plant for breaking up masses of colour, when such is produced by dwarf and more formal plants; and this being a style in which I am interested, I look upon this, among some others, as effective for planting in single specimens. *C. tuberosa* might be made useful as a graceful edging plant. They are of easy culture, and lift better than most tuberous-rooted plants with balls. To increase them, it only needs that the roots be divided, and they can also be increased by cuttings very much in the same way as *Dielytra*.

Crocus, Cloth of gold, 4 inches, yellow—February to April.

Crocus, Cloth of silver, 4 inches, white, purple stripes.

Crocus, common yellow, 4 inches, yellow.

Crocus, common blue, 4 inches, blue.

Crocus, David Rizzio, 4 inches, purple.

Crocus, Gold-finder, 4 inches, white.

Crocus, Ne plus ultra, 4 inches, violet, edged with white.

Crocus, Sir John Franklin, 4 inches, purple.

Crocus, Queen Victoria, 4 inches, white.

As one of those spring flowers which appear among

the first promises of Flora's gifts, the Crocus, as an ornament of the spring garden, is a general favourite, being neat and trim in habit, delicate in its shades of colour, cheap and easy of culture. Another feature which very strongly recommends it is its suitableness for planting close to the edges of beds and borders, where it will remain for years, and not interfere with the preparation of the beds for the summer flowers. It is also singularly well adapted for intricate planting in scrolls and designs in small borders, and as patches in mixed borders; and for planting among grass, to take up the waning simple beauty of the snowdrop, it is well adapted. The varieties which are now enumerated in catalogues are, like many other things, endless; but, as in the case of most other plants for groups and lines, distinct self-colours are most effective, and the common varieties named above are the most useful and cheap. Those who wish for striped and tipped varieties can become acquainted with them by consulting a bulb catalogue.

The culture of this charming little plant is exceedingly simple. When to be purchased and planted for the first time, I would recommend beginners, and especially where the soil is rather retentive than otherwise, to purchase and plant early,—not later than the end of October. At the same time, they can be planted in light dry soils all through the winter, but it is not desirable to be later than the middle of November, even under the most favourable circumstances. As for most other bulbs, a sandy loam, well enriched with rotten manure, is the best. The ground should be broken up as finely as possible; and in planting edgings and lines, the best way is to draw a drill widely, placing

a double row of bulbs about a couple of inches apart in width in the bottom of the drill, and about 3 inches apart lengthways, covering the bulbs to the depth of 4 inches. Should the ground be heavy, it is desirable to put a little fine sandy soil, or even sand itself, under the bulbs, and to fill up the drill entirely with light rich soil. In planting groups in mixed borders, 6 or 8 bulbs should be planted in groups, about 2 inches between each bulb, each group being of the same variety, and the varieties planted time about as their colours suggest. They may remain undisturbed from four to five years, during which time they will multiply and improve. When lifted with the view of increasing them or regulating them, this should be done while the leaves are still green. The soil clings nicely to them, and they can be divided into patches and planted immediately, putting a little rich sandy soil about their roots; and, if well watered, they will scarcely suffer. Indeed I have frequently transplanted Snowdrops, Crocuses, and Daffodils when in full bloom, and divided them without their suffering in the least. Mice are ravenously fond of *Crocus* bulbs, and must be vigilantly watched, in the case of fresh plantations, especially when they have been covered with fresh soil. A few mice will soon play havoc with a great extent of bulbs, so that the little pests must be carefully watched and destroyed in the usual way, by trapping and poisoning.

Centaurea Ragusina, 12 to 18 inches, lovely silvery foliage.

For the propagation and general treatment of this fine plant, see Summer and Autumn Flower-Gardening. As a panel plant, or for the centre of baskets, it is most effective, and so hardy that it can be put out with all safety in

most localities after the end of March, if previously well hardened off. For summer decoration, it is much better to plant it in April; and in order to make the same plants available for spring and summer work, it is best to plunge it in its pots, so that in the beginning of June it can be moved about as required, without suffering from transplanting,—a process of which it is not over fond, having very easily injured roots. A few scores of this plant, judiciously dispensed in the parterre, are very effective; and for panels in blue or purple, nothing can be better.

Cyclamen Coum, 3 inches, red—January and April.

Cyclamen Coum vernum, 3 inches, red, with var. fol.—Jan. and April.

Cyclamen, hederifolium, 3 inches, rosy pink—January and April.

It would be difficult to point to any plant which combines so much tiny gracefulness and sparkling beauty in so condensed a form as is furnished by the beautiful little leaves and bright flowers of these plants; and, flowering with the first return of spring, they should have a place in every spring garden. Of course they are so small that they are not adapted for extensive beds or borders; but for placing round the margins of small beds or vases that are placed below the eye, where they can be inspected, they are very interesting. They thrive best in dry gritty soil and rather shady situations than otherwise. When removed from their blooming positions, they should either be potted or placed in light soil, where heavy rains can be warded off them while at rest; or, where such cannot be accomplished, they can be kept in pots, placed in cold frames till the severity of the winter be over, and then plunged in their pots, where they are required to bloom. The whole of the *Cyclamens* seed freely, and are remarkably

easily raised in this way. The seed should be sown, when ripe, in light sandy soil, well enriched with leaf-mould. When fit to handle, they may be planted either in boxes or in a piece of prepared soil, where, with a couple of years' growth, they make flowering bulbs.

Dactylis glomerata variegata (variegated Cock's-foot Grass).

This summer favourite can also be made available for dwarf edgings in spring, for in March, April, and May, in its fresh growing state, it is more delicate and chaste-looking than at any other period. The summer plants should be lifted and divided as soon in autumn as arrangements for spring-gardening can commence. By dividing it, and laying in like a Box edging, where it is wanted for the spring, it gets hold before the severe weather sets in, and commences to grow in spring, in time to look beautifully fresh and effective with the *elite* of the garden. It will attain to the height of 7 or 8 inches by the middle of May in ordinary springs, and in that state is most graceful; and if arranged so as to remain for summer, the same plants will do without any further trouble; but if to be moved, it moves perfectly well with balls in May and June. In planting it in autumn, it will thrive all the better if a little rich free soil be laid to its roots; and it should be rather deep than otherwise, and made firm in the soil.

Dielytra spectabilis, 24 inches, rose and yellow—April and May.

Dielytra spectabilis, 24 inches, white and yellow—April and May.

Except in early localities and favourable seasons, the blooming of these plants cannot be counted on till the beginning of May. But as it is a plant of great beauty of foliage, I enumerate it as suitable for a panel or relieving plant, in sheltered positions. It is perfectly

hardy, bears transplanting well, and will grow in almost any soil. Its propagation is most easily effected by division; but it strikes very freely from cuttings, when in a growing state in spring. The cuttings should be placed in a gentle heat, potted off when rooted, and planted out in May, when well hardened off. It is a charming mixed border plant. There is a variety called *D. cucullaria*, said to be very beautiful, but I have not seen it.

Dodecatheon Meadia (American Cowslip), 9 inches, purple and lilac—April and June.

Dodecatheon Meadia album, 9 inches, white—April and June.

Dodecatheon elegans, 12 inches, rose and lilac—May and June.

Dodecatheon integrifolium, 9 inches, lilac and pink—April and June.

Besides these, there is one called *D. Jeffreyanum*, said to be very beautiful, but I have never seen it; and it is yet, I believe, scarce. The varieties named, especially *D. Meadia* and *D. elegans*, are pretty plants for both beds and lines. They multiply rapidly, and can be extended by dividing them. They are generally considered not to do well except in a peaty soil; but the finest lot of them that ever I saw was grown in very sandy soil, well enriched with rotten leaves; and they are often found to thrive well in mixed borders where the soil is light and porous. When removed from the beds, they should be lifted with as much mould as possible attached to them, and laid into light soil, into which a good proportion of leaf-mould should be mixed, where peat cannot be had; and in the heat of summer they should have a mulching of half-decayed leaves or manure spread over them, to keep them in a medium state of moisture.

Eranthis hyemalis (Winter Aconite), 4 inches, yellow, Jan. and Feb.

This little yellow harbinger competes with the Snow-

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drop for earliness. It is remarkably showy, producing its bright yellow circlets of blossom profusely oftentimes among frost and snow. It is one of those plants which, like the Crocus and Snowdrop, can be planted close to the edges of beds, and left all through the summer, in which way it thrives much better than when removed every year. It is not, however, a plant that I should recommend to be much used for beds, as its beauty is over so early. Its proper place is in the mixed border or front of the shrubbery border, where it can be left undisturbed without any inconvenience. It makes strong roots, and it is easily increased by breaking them up into as many pieces as there are crowns to be found on them. The end of May or beginning of June is a good time to divide it, when it should be planted in rows, and treated to some light sandy soil about its roots.

Erythronium dens-canis (Dog's-tooth Violet), 6 inches—March and April.

Erythronium dens-canis purpureum, purple—March and April.

Erythronium dens-canis roseum, rose—March and April.

Erythronium dens-canis album, white—March and April.

Erythronium Americanum, yellow—March and April.

Beautiful and very interesting plants, with pretty flowers and spotted leaves, rendering them very distinct and ornamental spring flowers; and being dwarf and compact in growth, they are very useful for small beds and edgings. Like the Dodecatheon, they thrive well in peat, or any light sandy soil well enriched with rotten leaves. If the soil be heavy, a quantity of road grit or coarse sand, and a large proportion of leaf-mould, should be mixed in with it; and in planting, a little sand should be put about the bulbs, to prevent decay from excess of water. The two can be planted close to the edges of

beds, and allowed to remain all summer like the Crocus; and if so left, they increase with greater certainty than when frequently removed. They can be purchased cheaply, and should be planted as early in October as the beds can be got ready for them. Planted rather thickly in single rows, they make neat little edgings the first season; and even when the flowers are past, the leaves are sufficiently pretty to be effective as an edging, till they begin to decay. There is an improvement on *E. purpureum* called *major*, but I am not acquainted with it. The flowers are said to be larger and more effective.

Euonymus radicans variegatus, silver-foliaged shrubby plant.

This is one of the most lovely variegated hardy permanent edging plants in cultivation. It almost rivals for effect the variegated *Pelargonium*, and can be made available for winter, spring, and summer. It bears trimming to keep it compact and neat, which, however, it naturally is. When sufficient stock can be had of this, it cannot fail to take a high position. It is not particular as to soil, and thrives well in any ordinary garden soil well enriched with rotten leaves. It is increased from cuttings in summer, under hand-glasses, in a mixture of finely sifted leaf-mould and sand in about equal proportions. Firm cuttings, about 3 or 4 inches long, are best. It can also be struck in heat in spring.

Fritillaria imperialis (Crown Imperial), 3½ feet, red—April and May.

Fritillaria imperialis, *foliis aureis*, 3½ feet, red—April and May.

Fritillaria imperialis, silver striped, 3 ft., red—April to June.

Fritillaria meleagris, 1½ foot, various—May and June.

Fritillaria meleagris nigricans, 1½ foot, purple and yellow—May and June.

Fritillaria Persica, 2 feet, brown and purple—April to June.

Fritillaria præcox, 1 foot, white—April to June.

Fritillaria Crown upon crown, 2 feet, red—April to June.

This flower is probably more stately and distinct in character than really beautiful. The tallest varieties are handsome and striking-looking plants, and the golden and silver foliaged are very ornamental. For back lines, or in mixed borders, they are well worthy of attention ; or planted at intervals among lower growing plants in beds, they would be equally effective. They are all very hardy, and easy to manage, increasing freely if left in the ground. Those in mixed borders of course can be left undisturbed for several years. They thrive well in rich sandy and deep soil. When purchased from the seedsmen, they should be planted not later than November ; and each bulb, when put in the ground, should be surrounded with a handful of sand. They are not very good plants to move before their growth is completed, and, if possible, a little soil should be moved with each bulb ; and when laid in a shady place, they should be kept watered for a time. However, if planted in back lines and mixed borders, there will be less necessity for moving them often.

Galanthus nivalis (Snowdrop), 6 inches, white—January to March.

Galanthus nivalis flore-pleno, 6 inches, white—Jan. to March.

Galanthus plicatus, 6 inches, white—January to March.

This simple and elegant flower bursts upon the eye like 'soothing strains upon the ear.' It leads the van of Flora's treasures, and fills the mind with the hope of the bright procession that is to spring from the womb of the new-born year. The Snowdrop,—who does not love it, and look upon it with a kindly eye, as it peers through the brown grass or cold soil, and seems to thrive the best with the breath of spring congealed upon its slender form ? We would advise all who have a lawn, ever so small, or grassy bank, to plant some Snowdrops ;

and the edges of plantations, pleasure-grounds, or walks can also be made cheerful with this elegant flower. They may be planted in stars, crests, and numerous designs, by making holes 4 inches deep with a dibble, and dropping in a bulb or two. In this way they flourish remarkably; and as the leaves get pretty well matured before mowing commences, they remain safe till another year. Few plants remove better; and when planted as edgings or lines, they can be lifted, immediately they are done blooming, with balls, and be put in any out-of-the-way corner to mature themselves. They should be planted in October when thus removed; but if put very near the edges of beds, they may be allowed to remain for a good many years without being moved. They are so hardy and well-doing that they can be transplanted with success any time before they have fully expanded their flowers. The common single is the most effective. *G. plicatus* is very dwarf.

Gentiana acaulis, 6 inches, blue—April to June.

Gentiana verna, 4 inches, blue—April and May.

Few plants are more charming than these—the common garden and spring *Gentianella*. They form dense tufts of dwarf foliage, studded over with brilliant blue flowers. *G. acaulis* thrives luxuriantly in rich loamy soil: indeed the finest lot of it we ever saw, was growing on a tenacious loam approaching to clay. It, however, must be freely exposed to the sun to bloom well; and both varieties are beautiful plants for planting on moist places sloping to the sun. *G. verna* will grow most freely on a rich loam where there is no stagnant water, but, at the same time, plenty of moisture and depth of soil. Both will, however, do very well in the majority of garden soils that are not very hot and scorching.

Neither of them will flower very freely if removed every year; and as they are excellent edging plants, it is well, if possible, to leave them in compact lines round the outer edges of the beds all summer. If they are moved, it should be done immediately they have done flowering, and in patches, with balls to each patch; and when planted again in autumn, care should be taken to lift the roots entire. In order to do this, it is best to plant them in rather fibry loam and leaf-mould, in which they will root freely, and which adheres well to the roots in autumn. In summer especially, *G. verna* should be well watered after being planted in the reserve ground. They are easily increased by division.

Hepatica triloba, 6 inches, various—February to April.

Hepatica triloba, single and double blue.

Hepatica triloba, single white.

Hepatica triloba, double and single red.

Hepatica triloba, double and single pink.

Hepatica triloba, double and single mauve.

The Hepaticas are very charming spring flowers, and, on account of their thriving and blooming on shady borders, where they never get any sun, are valuable for such positions. They are, moreover, among the very best plants we have for moving yearly with impunity, as they are so easily lifted with balls. They thrive best in a peaty soil, but in this respect are not particular, and generally do well in any garden soil that is free and moderately rich; and they will bloom and look very beautiful in the partial shade of shrubs or trees, while at the same time they bloom well, but not so long, in open places. They are very easily increased by division, which should be done as early after they are done blooming as possible. When divided and planted, a little fresh

soil, principally leaf-mould, or peat and sand, should be put to the roots of each patch, to start them away freely. If dry weather at the time, they should be watered, and their nursery beds should be in the shade. They are most serviceable for edgings and the fronts of mixed borders. There is one called *G. angulosa*, which I have not seen: said to be very fine,—deep blue, with very large flowers.

Helleborus niger (Christmas Rose), 12 in., pink—January to March.

This strong-growing plant, which blooms in the depth of winter sometimes, is an old and well-known favourite. Few plants are so easily cultivated. It bears moving at any time; and its blooming season being very early, it can be moved to make way for a later spring-flowering plant. It is easily multiplied by division.

Hyacinths.

This popular favourite is the chief of all the bulbs available for spring. The cheap rate at which it can now be purchased, and the ease with which it can be well if not superbly cultivated, places it within the reach of all who possess a garden. It is indeed scarcely possible to estimate too highly the qualities of the Hyacinth as a spring flower. Whether as regards delicacy of colour or sweetness of perfume, it has few equals.

The soil best suited for growing it well, is a rich, deep, light, loamy one, in which water cannot stagnate. Any ordinary garden soil that is not tenacious and wet, if deeply dug and well manured with well-decayed leaf-mould, or, what is better, old cow manure, will grow the Hyacinth well. To bring its blooms to first-rate excellence, it requires a quantity of fresh loam, rotten manure, and sand mixed in; but, except in very ex-

ceptional cases, such luxuries cannot be largely indulged in. In preparing a bed in the ordinary way for Hyacinths, trench it to the depth of 18 inches, putting in either of the manures named above, and thoroughly pulverize the soil in the process. Then mix it with the surface, and put a slight dressing of the same; and having levelled the bed, it is ready for the bulbs. If an early display is required, they should be planted immediately the beds can be got ready, after the autumn flowers are removed; but for later blooming, November is early enough to plant.

The soil should not have a foot set on it after it has been prepared, and, consequently, a board should be used to stand upon when the beds are too large to be planted without going on to them. To produce an effective bed of Hyacinths alone, the bulbs should be planted not wider apart than 9 inches; but when the surface of the beds is to be carpeted over with any other low-growing plant, the bulbs may be put in at 12 inches apart, with very good effect. The crowns of the bulbs should be 3 to 4 inches, according to the size of the various kinds, beneath the surface of the bed, when all is levelled up and finished. Where the soil is at all inclined to be heavy, it is a good plan to surround each bulb with a handful of sand or road grit. In severe winters it is advisable to cover the surface of the beds with some loose material, such as fern, or long stable manure. The covering should be removed as the shoots come through the ground. Unless they can be left in the beds undisturbed to mature their growth, it is useless to plant the bulbs again, with the hope of a good display from them a second year. Indeed, varieties suitable for outdoor decoration can now be purchased so cheap that it

is scarcely worth the trouble to save the bulbs. If when in bloom they can be covered from wet and late frosts, they will remain in beauty much longer than when exposed to all weathers. In planting a bed of Hyacinths, we have a strong objection to mixing up a great variety of sorts in one bed, and think the effect produced by planting a centre of one sort with a band of another, much finer. And a very pretty effect is produced by covering the surface of the soil between them with nice green moss; or the surface of the bed, where wide planting is practised, can be planted with some of the dwarfer-growing annuals; or with *Cerastium*, or any other low-growing plant, a very effective dotted bed can be produced.

Iberis corifolia (Candytuft), 9 inches, white—March to May.

Iberis saxatilis, 9 inches, white—March to May.

Iberis sempervirens, 9 inches, white—March to May.

Iberis Gibraltaria, 12 inches, white—March to May.

These are probably the most effective white-flowering Perennials that can be enumerated for early flowering. They are very useful either for rock-work, baskets, or beds, and last a long time in bloom. They are like the *Alyssum*,—easily transplanted with impunity; and the same plants can be used for years in succession. When removed from the beds in early summer, they should be heeled carefully in behind a wall, where the mid-day sun cannot reach them, and be watered if the weather is dry. They can be propagated in the same manner as recommended for *Alyssum*; but if hand-glasses or frames can be spared for them, all the better. The young plants are very neat as edging and line plants the first year after they are struck. The cuttings should be put in early; and immediately they are well rooted, planted

into free rich soil, in which they make nice young plants before October.

Iris Susiana, 2 feet, brown, netted with dark lines—April and May.

Iris Persica, 6 inches, various—April and May.

Iris foetidissima foliis variegatis, 2 feet, striped foliage.

The Iris is a beautiful genus of plants, but few of them bloom sufficiently early to mingle with the early spring flowers. *I. Persica* is the earliest, and some of its varieties are very beautiful. The striped-foliaged one named above is a very ornamental plant, admirably adapted for back lines in ribbon borders, panels, and centres of large beds. It is tuberous-rooted, and bears transplanting very well; only a ball of soil should be preserved with it when removed, and it should be planted in light rich soil for the summer. It is easily increased by division. *I. Susiana* is a very distinct and remarkable-looking kind, and as it blooms early, would make a good plant for mixed borders and centres. It is also a tuberous-rooted variety, and increases by division. *I. Persica* being dwarf, is useful for edgings, and thrives best if the bulbs are left undisturbed for several years.

Muscari botryoides (Grape Hyacinth), 9 inches, blue—March and April.

Muscari botryoides album, 9 inches, white—March and April.

Muscari moschatum, 9 inches, blue and yellow—April and May.

Muscari monstrosum, 12 inches, blue—April and May.

Muscari plumosum violaceum, 12 inches, violet blue—April and May.

There is a great variety of this well-known plant, and though all are neat and beautiful, the above are the best. They are not, however, very good plants for beds, as they require staking, especially *M. monstrosum*, or it will be laid down with wet, as the heads of bloom hold the moisture in wet weather and become top-heavy. The

best place for them in all respects is the mixed border, where they can remain undisturbed for years; for if lifted frequently, they do not thrive well. They will grow well in almost any soil.

Myosotis montana, 12 inches, blue—March and April.

This beautiful species of Forget-me-not should be grown wherever very early flowers are an object. It sometimes flowers with the Snowdrop and Winter Aconite. It has brighter and larger flowers than the wood Forget-me-not, *M. Sylvatica*. Like most of the *Myosotises*, *M. montana* requires a moist situation, and provided the drainage is good, it does well with a good supply of water. When removed from the beds in summer, it should be planted in a moist, shady place, and in dry weather well watered. It is increased by division.

Narcissus albus plenus oderatus, white—March and April.

Narcissus bulbocodium, 6 inches, golden yellow.

Narcissus biflorus, 12 inches, white and primrose.

Narcissus bicolor, 12 inches, yellow and white.

Narcissus Incomparable, 12 inches, yellow.

Narcissus Orange Phoenix, 12 inches, orange and cream.

Narcissus poeticus flore-pleno, 12 inches, white.

Narcissus pseudo-narcissus, 8 inches.

Narcissus tenuifolius, 12 inches, golden yellow.

Narcissus Trumpet-major, 12 inches, deep yellow.

Narcissus Campernelle, 12 inches, yellow.

Narcissus jonquilla (Jonquil), double, 12 inches, yellow.

Narcissus jonquilla, single, 12 inches, yellow.

Narcissus Tazetta (*Polyanthus narcissus*), various—April and May.

Those kinds known by the designation of Garden Narcissus are perfectly hardy, very showy, and some of them exceedingly fragrant, and all are plants strongly to be recommended for mixed borders. *N. poeticus* is par-

ticularly fragrant, and the same may be said of the single Jonquil. *N. bulbocodium* and *N. pseudo-narcissus*, being dwarf, are very appropriate for front lines or edging, and for rock-works. *N. Tenuifolius* is particularly rich in colour. The general treatment of the *Narcissus* is similar to that of the *Hyacinth*. When purchased from the nurserymen they should be planted not later than the end of October. In mixed borders they do remarkably well, if allowed to remain undisturbed for several years. When used for beds, it is difficult to move them in time for the summer flowers, without their suffering from removal, before they are fully ripe. It is, however, for mixed borders that we principally recommend them. The whole of the *Polyanthus narcissus* are exceedingly showy in borders, and, with the exception of the Roman variety, are suitable and very effective as border plants.

Omphalodes verna, 6 inches, blue—March and April.

This pretty little plant has large brilliant blue flowers resembling a *Forget-me-not*, but in loose spikes. It is a plant that thrives well in dry shallow soils, provided it has a good proportion of leaf-mould mixed in with it. But perhaps its most appropriate place is in the rock-work, where it can have shade in summer. When used for beds, it should be in a shady position if possible, and when removed during summer it should be placed in the shade. It is increased by dividing it into pieces after it is done flowering, and planting in a mixture of equal proportions light loam and leaf-mould.

Primula vulgaris (acaulis) (Primrose), 6 inches—March to May.

Primula vulgaris, single and double, yellow.

Primula vulgaris, single and double, white.

Primula vulgaris, single and double, lilac.

Primula vulgaris, single and double, pink.

Primula vulgaris, single and double, crimson.

Primula vulgaris, single and double, purple.

Primula auricula, 4 to 6 inches, various—April and May.

Primula auricula Alpina, 4 to 6 inches, various—April and May.

Primula elatior (*Polyanthus*), 6 to 15 in., various—April and May.

The whole of these are very charming spring flowers, and being so easily managed, may be classed among the flowers of the million. As has already been observed regarding the comparative merits of double and single flowers, the single varieties of the Primrose are most effective for massing. The single purple Primrose is a most effective bedding plant: few plants can excel it in the same colour either among the spring or summer plants. *P. auricula* is what is generally known as the Dusty Miller, and, from the mealy appearance of its leaves, looks pretty and interesting anywhere. It is very dwarf, and well adapted for edgings or lines. Many of the alpine species are very beautiful, but are still rather scarce and expensive to be had in quantity. The Primrose and *Polyanthus* should be grown extensively in heavy retentive soils, in which they thrive well, and continue much longer in bloom than on hot dry ones. All the varieties of both doubles and singles are very easily and rapidly increased by division. The early part of June is the best time to divide them. If necessary to increase stock quickly, they should be divided into as many pieces as there are crowns to each stool or plant, taking care to have a piece of root to each, if possible, although even rootless pieces can be used with success. The best place to plant them for the summer is behind a north wall where the sun never strikes them. They are natives of moist shady places, where the soil is generally heavy and tenacious. The

beds for the young stock should be well manured with rotten cow dung if it can be had. They will grow rapidly as soon as they get hold, and make nice plants for autumn-planting. The single sorts can be easily increased from seed. The seeds should be saved, and sown separately on a moist shady border.

Phlox frondosa, 6 inches, white—April and May.

Phlox Nelsonii, 6 inches, pink—April and May.

These two pretty dwarf Phloxes are well worthy of culture, being suitable either for small beds and baskets or edgings. They do in ordinary garden soil, and are increased by division.

RANUNCULUS.—*Turban Varieties.*

Carmine.	Spotted golden.
Crimson.	Romana, scarlet.
Golden, bright yellow.	Scarlet Dutch.
Black Turban.	Turban d'Or, scarlet and gold.
Grandiflora, crimson spotted.	Yellow.
Orange.	White.

For effectiveness in beds and lines the Turban varieties are much to be preferred to the Persian varieties, although for compactness and symmetry, and general individual beauty, the latter must be admitted to be unrivalled by any other spring-flowering plant; at the same time, for effect in a flower-garden, they fall short of the Turban varieties.

The time to plant them must be regulated by the time they are required to bloom. If required to bloom in April and May, the end of January, or early in February, is sufficiently early. To grow them to perfection, the soil requires to be good, rich, and loamy. Three or four inches of well-rotted manure should be

trenched in to the depth of 18 inches, and unless the natural soil be good, the top spit should have some fresh loamy soil forked into it along with a little more manure. Manure of a cool nature is the best suited for the *Ranunculus*, and therefore cow dung is preferable. The surface of the bed should be well pulverized, and have the manure thoroughly mixed with it. The tubers should be planted 6 to 8 inches apart each way, and covered to the depth of two inches, being sure to place them firmly in the ground, with their claws downwards. It is a good plan to cover them with a little sand before levelling the soil over them. They require to be protected from severe frost; and to this end, let the bed be covered over with litter or half-decayed leaves, which of course must be removed as soon as the plants begin to come through the ground in spring. As they make their roots near the surface, they are more subject than almost any other plant to suffer from drought in the spring months; and careful attention in the way of watering is necessary, or their blooming season will be very short. When in bloom, an awning of canvas thrown over them when the sun is brightest, and during rains, will prolong their season, and their colour will be finer. As soon as the leaves become yellow, the roots should be taken up, dried, and stored in a dry airy place on shelves. If left in the ground to get much rain after the tops are ripe, they commence to make fresh roots; and after doing so, they are never so strong and fine the following season.

Santolina incana, 6 to 12 inches; silvery foliaged.

To have this lovely plant in perfection for spring, cuttings should be struck in heat the previous spring; and

when well hardened off, planted in light rich soil, to grow throughout the summer. In this way it makes beautiful plants 4 to 6 inches in diameter, and close on the ground, and transplants well in autumn with balls, and forms very neat edgings the following spring and summer. To our mind it is much the prettiest when in this young, fresh, and compact condition; moreover, plants at this age move much better in autumn than older ones.

Saxifraga granulata flore-pleno, 9 inches, white—March to May.

Saxifraga pyramidalis, 1 foot, white—April and May.

Saxifraga umbrosa, 1 inch, pink—April and May.

These three Saxifrages make most beautiful beds: *S. pyramidalis*, from the compact way in which it throws up its pyramid of flowers, is well adapted for lines, but it always ought to be staked, or it will not bear up against wind and rains; *S. granulata flore-pleno* makes a lovely bed or row; and *S. umbrosa* is useful for the wonderful amount of bloom that it produces: it is well suited for edgings to walks in shady places. In spring it produces its bloom, which, when faded and removed, leaves the compact mass of leaves close to the ground. It is a plant that increases itself with great rapidity, every morsel of it forming a plant just the same as Daisies. *S. granulata flore-pleno*, as its name denotes, has roots resembling corns of grain. It is increased by separating and planting these as soon as it has ripened its tops. They should be planted in rows in open rich soil; and when removed in autumn, should be planted thickly in the beds, preserving some soil to the roots in the process. The Saxifrages are very numerous, and mostly all pretty, either in flowers or foliage, but few of them are suitable for beds in spring.

Scilla bifolia, 3 inches, blue—March and April.

Scilla Sibirica, 4 inches, blue—March and April.

Scilla præcox, 6 inches, blue—April and May.

Scilla verna, 6 inches, blue and white—April and May.

Scilla Peruviana, 12 inches, blue—May.

Scilla alba, 12 inches, white—May.

Scilla amæna, 6 inches, blue—March and April.

Scilla Italica, 9 inches, blue—March and April.

These lovely gems are most beautiful spring bulbs, and deserving of more extensive cultivation. *S. Sibirica* and *S. amæna* are unrivalled as dwarf blue plants for margins and front lines, and for very small beds are invaluable. *S. præcox* and *S. Sibirica* are admirable window plants in pots. A light sandy soil suits them best, and, planted for margins, they may be allowed to remain for several years without removal. When bought, they should be planted in October, about 3 inches deep; and when the soil is heavy, they should be covered with light gritty soil, such as road scrapings.

Sempervivum Californicum, 2 inches.

A lovely little plant, forming itself into large dense green rosettes, each leaf being tipped with dark brown. It makes a most lovely compact edging to a small bed when planted closely, and thrives well in ordinary garden soil, and propagates itself by forming small offsets round each plant, which, taken off and planted in rich sandy soil, form nice plants 3 to 4 inches across in the season. Bears removal well.

STOCKS.

East Lothian Intermediate, white, 12 to 15 inches.

East Lothian Intermediate, scarlet, 12 to 15 inches.

East Lothian Intermediate, purple, 12 to 15 inches.

Whether it be for autumn or spring and early summer decoration, these Stocks rank amongst the very *élite* of

flowering plants. Their purity of colour and abundance of bloom, together with their easy management, recommend them to all. Their treatment for autumn flowering has been already detailed. To have them in bloom in spring and early summer, the seed requires to be sown about the middle of May or first week in June. This is earlier than is generally practised ; but unless they are well established plants before winter, they are too late in flowering to come in with the generality of spring flowers. The best place to sow is in a border of light, not very rich, soil, having an east or west aspect. As soon as they are 2 or 3 inches high, and before they become drawn, transplant them into beds, in rows about 6 inches apart each way. Till they get a fresh hold of the soil, and begin to grow, they will be the better of being shaded and watered, should the weather be bright and dry. By the middle of September, they make strong stocky plants—in some cases showing bloom buds,—and will be tolerably thick in the beds. Every other plant should then be potted off into 5 and 6 inch pots, according to their size. For this purpose, equal proportions of loam and leaf-mould, with a sixth of the whole of sand, is best ; but those who cannot procure soil exactly of this description, will succeed very well with ordinary garden soil, mixing with it a little rotten dung and road scrapings. When potted and watered, set them in a shady place, such as behind a wall or hedge, till they show the points of their white roots at the sides of the pots,—then they are ready to be fully exposed to the sun ; after which they require to be well supplied with water.

Before severe frost sets in, they should be placed in cold frames where such are at command, plunging the

pots in some open dry material such as ashes or sawdust. They will winter very well without glass in cradles formed by running a board along each side, and hooping over the space with rods, and protecting with mats and dry litter in severe frost. When all danger of severe frost is over, plant out in the beds where they are to bloom. In ordinary winters, Intermediate Stocks stand out all winter, especially in dry sheltered situations; and those left in the beds at the time of potting can be removed early in October to their blooming beds. If later than the time named, they do not get sufficient hold of the soil to enable them to stand the winter well. Of course, if lifted with balls, they have a great advantage; but Stocks do not make very fibrous roots, and are difficult to transplant with balls. In all cases where the winters are generally severe, it is much the safest to lift and pot a quantity, to meet contingencies; and any extra care bestowed on them through the winter will be amply rewarded by splendid beds in spring and early summer. The varieties recommended always bloom best in the cool of the autumn, and are frequently fine till well on in December; and after that date, those who can place them in heat, can lift and bloom the old plants in spring with success.

TULIPS.—*Single Varieties.*

- Canary Bird, 8 inches, yellow—April and May.
- Belle Alliance, 8 inches, crimson scarlet.
- Brutus, 9 inches, golden, yellow, and red.
- Couleur Cardinal, 8 inches, crimson.
- Cottage Maid, 6 inches, rose pink, white stripe.
- Duc van Thol, 4 inches, scarlet.
- Duc van Thol, 4 inches, white.
- Duc van Thol, 4 inches, yellow.

Keizerskroon, 6 inches, yellow and red.
 Pottelbakker, 10 inches, yellow.
 Rosa mundi, 6 inches, white, bordered with red.
 Royal Standard, 8 inches, white-striped crimson.
 Stella, 6 inches, crimson,
 Sunbeam, 6 inches, scarlet.
 Thomas Moore, 8 inches, orange.
 Vermilion Brilliant, 6 inches, vermilion scarlet.
 Waterloo, 8 inches, crimson.
 Yellow Prince, 8 inches, bright yellow.
 White Swan, 8 inches, white.
 Silver Standard, 6 inches, white.
 Gold Standard, 6 inches, yellow, tipped red.
 Queen Victoria, 6 inches, white.

Double Varieties.

Blanc borde pourpre, 8 inches, violet purple—May.
 Couronne des Roses, 6 inches, white.
 Duc van Thol, 6 inches, red, margined yellow.
 Etoile Cramoise, 8 inches, crimson.
 Helianthus, 8 inches, scarlet, with gold border.
 Imperator rubrorum, 6 inches, scarlet.
 La Candeur, 6 inches, white.
 Lord Wellington, 9 inches, purple lilac.
 Mariage de ma Fille, 10 inches, white-striped violet.
 Peony Gold, 8 inches, golden yellow, feathered crimson.
 Purple Crown, 8 inches, crimson.
 Rex rubrorum, 8 inches, dark crimson.
 Tournesol, 6 inches, scarlet and yellow.
 Yellow Tournesol, 6 inches, yellow.
 Yellow Rose, 8 inches, golden yellow.

In making the above selection of Tulips, the object has been to combine distinctness of colour with dwarf stiff habit of growth, as being most effective, and otherwise suitable for masses and lines. Tulips rank among the most showy and valuable of bulbs for both indoor and border decoration. The ease with which they can be cultivated, their hardiness, and the low rates at which

suitable varieties for beds can now be purchased, recommend them to all, and more especially to the amateur who requires his borders gay in spring at a minimum of expense and labour. They require treatment very similar to that recommended for Hyacinths. The beds intended for them should be deeply dug or trenched, and well pulverized ; and if they have been previously kept in good condition as to manuring and richness, a little leaf-mould is all that need be applied in autumn. Should the soil be naturally retentive, a greater proportion of leaf-mould should be mixed in ; and if road scrapings, or any light sharp soil, can be mixed in with the surface spit, it will be very beneficial, as they thrive best in an open soil, from which water passes quickly away. The planting should be performed before the middle or end of October, if possible. They will be much benefited by a handful of fresh sandy soil round each bulb. The generality of them when required in masses, without any ground-work composed of dwarf Annuals, etc., should be planted 6 inches apart each way. The dwarfer varieties—such as the Van Thols—are best at 4 inches. When the soil is levelled up over them, the crowns of the bulbs should be 3 inches deep. The single varieties are the earliest to bloom ; and when a lasting row or bed is required, a good plan is to plant a single and a double of the same colour time about. Like the Hyacinth, and other upright-growing plants, Tulips are well adapted for planting in groups, or dotted over the surface of a ground-work formed of low-growing Annuals, and such as Pansies or Daisies. Many of the striped and tipped varieties are very pretty and interesting, planted as mixtures in beds or mixed borders. If not turning yellow in the foliage

when they have to be removed in order to make way for the summer plants, they should be carefully lifted and heeled into light soil for a time ; and when the foliage has decayed, the bulbs should be dried in the sun, and stored away in a dry cool place till needed again in autumn. But so cheaply can these be purchased now, that unless the bulbs can be well ripened off, they are not worth the trouble.

Triteleja uniflora, 9 in., porcelain blue shaded white—April and May.

This pretty little plant is quite hardy, and, from the great substance of its flowers, remains in bloom a long time, and is a beautiful plant for small beds and lines. It can be bought at a moderate price, and succeeds with the same management as the Tulip in any ordinary garden soil. It should be planted not later than the first week of November.

Vinca minor (Periwinkle), golden variegated.

Vinca minor, silver variegated.

For forming permanent edgings to large beds, these Vincas are very effective. They can be trimmed to any desired height and form when they get well established, and will also bear pegging down. They increase themselves into stools, which can be lifted and separated when it is desired to increase them ; or cuttings put in when the growths become moderately firm, root freely ; but if laid down, plenty of young rooted layers can always be got. These and the common Periwinkles are excellent plants for planting in shaded situations, or for planting round the sides of baskets, or for hanging over raised beds.

VIOLA TRICOLOR (THE PANSY).

Imperial blue, 8 in., deep blue—Less or more all winter and spring.

Purple King, 9 inches, dark purple.

Trentham or Clieveden Blue, 8 inches, light blue.

White Queen, 6 inches, white.

Yellow Prince, 6 inches, yellow.

Those who have never witnessed the display that can be produced with these varieties of Pansies can form very little conception of it. I am not certain that any other plants could be named that will produce such an amount of bloom at any season as these Pansies, in April and May particularly. Imperial Blue, recently sent out, will, I think, prove a wonderfully effective plant. Its habit is stiff and erect, and the blooms are well thrown up on strong stalks, and the colour is very effective, approaching in intense blue the best forms of blue Lobelia. It cannot be too strongly recommended. Purple King is a very profuse bloomer, and of a very dark shade of colour; but though it yields a great blaze of bloom, it does not sustain the succession like some of the others. Yellow Prince is the most continuous bloomer that I have ever seen. Cuttings of it struck in September, and planted out in March, bloom all the summer and autumn, and the following spring remains a perfect cloud of yellow, till hot summer weather overtakes it, when it wanes a little for a time. Clieveden Blue is a good winter and spring variety, and yields a very heavy crop of its pleasing flowers in March, April, and May; but in hot weather it does not bloom well, and becomes almost white. Unless planted anew every spring, it is not so good a summer variety.

The way to have these in perfection for large beds in

spring is to propagate in September, and plant out in March. Where the soil and climate are moist, they bloom well nearly the whole summer, and about October it will be found that they throw up a mass of fine fresh young growths from the centres of the plants. The summer-flowering growths should then be all cut away, the plants lifted with balls, and planted where they are wanted to bloom in spring. In this way they make splendid plants, and bloom most profusely. They do not, managed thus, give so much flower through the winter months as younger plants propagated early, either by division of the older plants, or from cuttings in spring. If the plants are lifted carefully at the end of May or early in June from the flower-garden, and laid carefully in free rich soil in a shady place, cutting away all the more exhausted parts, and keeping them watered occasionally for a time, they soon begin to recruit their energies. They can, in July, be divided into as many pieces as can be had with roots, and planted fully deeper than they were before in free rich soil. They are very fond of well-rotted hotbed manure; and it should be applied freely, if fine healthy plants are to be produced. Planted thus, and kept watered, and in a shaded situation, they form plenty of fine fresh cuttings by the month of August, which root freely under hand-glasses in sandy soil. But those who have not even a handglass can root them behind a north wall, where the sun does not reach them. These cuttings root quickly, and will be ready for putting out into beds to grow awhile, before the borders where they are to bloom can be got ready for them. If they can be planted in October, all the better; but they can be planted with success, and without much check, up till Christmas,

when the weather is mild. Still it is best to plant before the end of November at the latest. The larger divided plants can be used for beds, and the young plants from the cuttings for lines and edgings: all of them will make a fine show in spring.

The varieties named seed freely, and if sown separately, will produce young plants resembling, in the majority of instances, the parents—particularly Yellow Prince. If the seed is sown about the end of June, the young seedlings make fine strong plants to plant at the usual time. In planting them in the beds, all the shoots that are longer than the others should be laid down into the ground; and in all cases deep planting is to be recommended. They are kept steady in the ground, and they root freely at the joints. The soil in which they do best for spring blooming is a rather sandy loam, well enriched with manure, although they are by no means particular, and thrive fairly in any common garden soil that is not absolutely poor or sandy, or too retentive.

Many of the spotted fancy varieties are very pretty in themselves, but for masses, the selfs with free hardy constitutions are preferable. For bedding purposes, those enumerated are the best I have seen.

Viola cornuta, 6 inches, bluish lavender.

Like the Common Pansy, this effective plant is available for spring as well as for autumn flowering, and for the former it requires to be managed exactly the same as recommended for Pansies. Either the summer-blooming plants, that are usually struck late in the previous autumn or early in spring, can be trimmed as detailed in the case of Pansies, and planted in the beds in

October ; or cuttings can be struck in July, and grown into good plants by October. The former are best for large beds,—the latter for lines and compact edging. This is an excellent plant for forming ground-work for Tulips, Hyacinths, and other upright-growing plants. It requires liberal treatment.

Viola odorata (sweet-scented Violets) ; various.

Few neglect the culture of those sweet flowers, and a nook should always be devoted to them in the flower-garden, where ladies and gentlemen can conveniently pick a few fresh blooms when they feel disposed. There are now numerous varieties of various shades of colour. Probably the old single and double Russian Blue and the White are the hardiest, and the Neapolitan the sweetest. But in sheltered situations under walls, where a few evergreen boughs can be placed over them during severe frost, most of the varieties do very well. The Czar is hardy and larger than the Russian. Queen Victoria, with its double white flowers, is very beautiful and sweet, and I believe the King of Violets is a very handsome and large double blue.

When they have made fresh growths in April and May, a piece of ground, such as a west border, should be well manured with leaf-mould, and if heavy, have some sand and light loamy soil mixed in with the top 6 inches. The runners should then be raised with a fork, and the most compact and youngest that have a root to them, selected and planted 8 inches apart each way. A slight shading for a few days after planting is necessary ; and throughout the summer they ought not to be allowed to suffer for want of water. The runners, which they—especially some of the varieties—will produce in quantity,

if allowed, should be pinched off as they appear. In this way they make fine plants for planting by the end of September, and will bloom more or less according to the weather, but most profusely in spring, up to the middle of May.

Hardy Spring-flowering Shrubs, suitable for Beds and Shrubbery Borders, and that thrive best in peaty soil ; but succeed very well in a compost, such as is described for Rhododendrons. E. are evergreen, D. are deciduous.

		Feet.	Colour.	Time of Flowering.
E	Andromeda polifolia (various), . . .	1	Pink.	May & June.
E	Andromeda pulverulenta, . . .	1½	White.	June.
E	Andromeda cassinifolia, . . .	1½	White.	June.
E	Andromeda floribunda, . . .	2 or 3	White.	May & June.
D	Azalea Pontica (many varieties, } some fragrant), . . .	4, 6	Various.	May & June.
D	Azalea nudiflora, } Many varieties ;	2 or 3	Various.	May & June.
D	Azalea speciosa, } all the Ghent			
D	Azalea viscosa, } varieties fine,			
E	Calluna vulgaris (Ling or Heather) } (many varieties), . . .	2	Red.	Aug. & Sept.
E	Erica codonoides, . . .	3	Red.	Apr. & May.
E	Erica carnea (herbacea), . . .	1	Red.	Jan. to May.
E	Erica ciliaris, . . .	1	Pink.	Apr. & May.
E	Erica Australis, . . .	3, 4	Pink.	Apr. to June.
E	Kalmia angustifolia (various), . . .	1, 2	Pink and red.	May to July.
E	Kalmia glauca, . . .	1, 2	Pink.	Apr. & May.
F	Kalmia latifolia, . . .	2, 3	Flesh-coloured.	
E	Ledum palustre, . . .	2	White.	Apr. & May.
E	Ledum latifolium, . . .	2, 3	White.	Apr. & May.
E	Ledum thymifolium, . . .	6 in. to 1 ft.	White.	May.
E	Ledum decumbens, . . .	2	White.	May.
E	Menziesia (Daboecia) polifolia, . . .	2	Purple.	Aug. & Sept.
E	Menziesia (Daboecia) alba, . . .	2	White.	Aug. & Sept.
E	Menziesia cærulea, . . .	1	Purple.	Aug. & Sept.
D	Rhodora Canadensis, . . .	2 to 4	Pale purple.	Apr. & May.
E	<i>Rhododendron Species.</i>			
E	Rhododendron Caucasicum, . . .	1½	Straw and pink.	April.
E	Rhododendron Dauricum, . . .	3, 4	Pale purple.	Dec. to May.
E	Rhododendron Dauricum atrovirens, . . .	3 to 6	Bright purple.	Dec. to May.
E	Rhododendron Catawbiense (various), . . .	4 to 6	Purple white.	Apr. & May.
E	Rhododendron maximum, . . .	6 to 10	Purple white.	June.
E	Rhododendron hirsutum (various), . . .	2 to 4	{ Red, of various shades.	{ June.
E	Rhododendron ferrugineum (various), . . .	2, 3	Red.	June.
E	Rhododendron odoratum, . . .	1 or 2	Fragrant.	June.
E	Rhododendron Govenianum, . . .			

RHODODENDRONS.—*Hybridized Varieties.*I. *Early Varieties flowering from the beginning of February to the middle of May.*

Altaclarenses, scarlet.	Sir Walter Scott (various), pink to rose.
Albertus (various), various tints, white to pink.	Eclipse, crimson.
Russellianum (various), bright crimson.	Grand Arab, scarlet.
Broughtonianum, rosy lilac.	Sun of Austerlitz, scarlet.
Nobleanum (various), damask crimson.	Victorianum, scarlet.
Gloire de Gand, white, spotted.	Ignescens, scarlet.
Blanc Superb, white.	Limbatus, blush, bordered with crimson.
Jacksoni, light rose.	Empress Eugenie, creamy white, spotted.
Mars, crimson.	Florence Nightingale, light pink.
Campanulatum superbum.	

II. *Medium Varieties flowering in May.*

Alarm, scarlet, white centre.	Elfrida, deep rose.
Album elegans, white.	Everestianum, rosy lilac.
Atrosanguineum, dark red.	Fastuosum flore-pleno, lilac, large truss.
Alexander Adie, scarlet.	Fleur de Marie, rosy crimson, with white blotch.
Albion, rosy red, spotted.	Faust, rosy lilac.
Amethystinum, blush, tipped with puce.	Genseric, dark claret.
Blandyanum, rosy crimson.	Gloriosum, white, red spots.
Blandyanum superbum, brilliant cerise.	Hendersoni, rosy crimson.
Barclayanum, bright crimson.	Henry Drummond, purplish crimson.
Brayanum, scarlet.	Hugh Fraser, purple.
Bylsianum, light red, pale centre.	Iago, rosy crimson.
Blatteum (Sir Isaac Newton), dark purple.	Lady Eleanor Cathcart, clear rose, spotted like a Geranium.
Beauty of Surrey, rosy scarlet.	Lady Dorothy Neville (Standard of Flanders), purple, spotted.
Coreaceum, white, dwarf.	Lord John Russell, pale rose, dark spots.
Curreanum, lilac purple.	Lady Gordon, white, yellow spots.
Congestum roseum, deep rose.	
Delicatissimum, pale pink, fading into white.	

Lord Clyde, blood.	Schiller, blue, shading into purple.
Mrs. Hemans, white, shaded pink.	Ingrami, blush white, with spots.
Mammoth, deep rich red.	Nero, dark rosy purple, spotted.
Mooreanum, rosy crimson.	Paxtoni, like Lady E. Cathcart; fine foliage.
Ne plus ultra, purple, light centre.	Perspicuum, milky white.
Neige et cerise, white and red.	Towardi, rosy lilac.
Omar Pacha, purplish crimson.	The Gem, white, striped pink.
Ornatum, dark scarlet.	Zuleika, delicate blush.
Pictum, white, buff spot.	
Sir Charles Napier, rose, spotted.	
Stamfordianum, claret, black blotch.	

III. *Late Varieties, blooming mostly in June.*

Butlerianum, white, bold flower.	Mr. John Waterer, bright carmine.
Candidissimum, white, perhaps the finest.	Mrs. John Waterer, bright rose, spotted.
Celebrandum, claret crimson, dark spots.	Mrs. Standish, pure white, brownish spots.
Colonel, deepest crimson; late.	Standish's Perfection, pale peach, ochre spots.
Concessum, deep rose, light centre.	Star of England, pale pinkish white; large.
Maculatum nigrum superbum, purple, dark spots; very late.	Leopardi, rosy lilac, red spots.
Marguerite, white, washed with lilac.	Vandyck, bright red.
Minnie, white, chocolate spots.	

Many more varieties might be added to each of these sections. Those under the first head having a large infusion of the blood of *R. arboreum*, *campanulatum*, and *Caucasicum*, flower early, and their blooms are often destroyed by the spring frosts. They can hardly be dispensed with, and may be associated with spring-gardening. Besides, some of them grown in large pots or tubs afford useful ornamentation in the conservatory. The later varieties under heads II. and III. have had *R. Ponticum* and *Catawbiense* for their female parents. They are perfectly hardy as shrubs, but sometimes the

blooms of class II. suffer a nip from the dry frosts towards the end of May. Group III. cannot be too strongly commended,—particularly the white varieties, which are extremely effective in the decoration of shrubberies.

The Sikkim and Bhotan Rhododendrons, from which so much was at one time expected, are scarcely suited to the out-of-doors climate of Britain. Even where they survive the winter, they seldom form flower-buds. The following have bloomed occasionally in the open air near Edinburgh—viz.: *R. glaucum*, *ciliatum*, *fulgens*, *Thomsoni*, and perhaps some others. Probably, if they were treated like Camellias, much might be effected with them. *R. Edgeworthi*, *Dalhousii*, *Jenkinsi*, *Maddeni*, *Aucklandi*, *Nuttalli*, etc., form admirable greenhouse and conservatory plants.

The foregoing lists of Rhododendrons have been looked over by men who are well acquainted with the very numerous varieties of this beautiful hardy flowering shrub; and such have been selected as are first-rate, in every respect, for a select and limited collection. There are many newer varieties which are very fine, but still so high in price as to prevent their being popular. Those who wish to know about these can refer to the catalogues of those nurserymen who grow them.

There is not another flowering shrub that deserves or will repay attention so well as the Rhododendron. It is magnificent beyond all rivals when in bloom, while few evergreens excel it as such at any season of the year. To grow them in the highest perfection, there is no doubt that a peaty soil is best: but let not this debar any from attempting to cultivate so splendid a flower. I have seen them succeed well on almost any soil,—from

a heavy clayey loam to a light sandy soil, provided there is no lime or chalk in its composition. They will not only not do well in limy soils, but in some cases will literally die out altogether in course of years. All who can procure a peaty soil should of course do so ; and now that railways have opened up almost every tract of country in the kingdom, peat is much more easily and cheaply procured by those who are remote from peaty localities.

But the employment of peat in the culture of Rhododendrons, though highly desirable, is not necessary. Rhododendrons may be, and are, grown well without a particle of it. In some localities there naturally exists a light silky loam, which suits Rhododendrons remarkably well, especially after a considerable proportion of well-decayed vegetable matter, such as leaf-mould, or the vegetable rot-heap which exists about most gardens, has been mixed with it. But where a compost has to be entirely made up for Rhododendrons, and peat is not attainable, then a different course must be followed. This becomes necessary where the soil is either a hard impenetrable clay, or a poor hungry soil, which is too dry for such a moisture-loving plant as this. To prepare beds or borders for Rhododendrons under such circumstances, the first thing to do is to remove the unsuitable soil to the depth of about 18 inches or 2 feet, and in clayey soils to see that the drainage is good, for, though fond of moisture, stagnant water about the roots is highly injurious. Into the bottom of gravelly hot soils 6 inches of a heavy loam may be put with advantage in as far as it will help to secure a cool sub-soil. The staple may be composed of loam, turfy material from the sides of highways or ditches or

hedges, well-decayed leaves, and a little thoroughly rotten cow dung. Indeed, any thoroughly decomposed vegetable refuse which can be brought together, such as old very rotten tan and the substances already named, and thrown into a heap, to be turned over and mixed with as much sand as will make it sparkle—such as sand and chips from a freestone quarry,—all thoroughly incorporated, will grow Rhododendrons and other American plants in a very satisfactory way. What is required most is a soil, loose, rich, and capable of holding moisture without being stagnant, which beds made in clayey soils are subject to, although cold clay subsoils are much more favourable than hot gravelly ones.

Rhododendrons may be moved and planted any time when at rest,—that is, when not in bloom or making growth. But October is the most desirable time for planting. The first summer after being planted, the surface of the soil should be mulched with half-decayed litter, such as leaves, in order to prevent evaporation, and to keep the roots cool and moist; and during dry weather a heavy watering occasionally of pond water will be of great benefit. When the plants show signs of weakness in such compositions, they should have a top dressing of some rich compost spread over the beds, such as cow manure and loam, in equal proportions; and as they bear lifting with impunity, they can be lifted at intervals of years, and some fresh rich compost added to the soil, and then replanted.

Plants with clear stems of a foot or two from the ground always flower better than low bushes; and in the northern and colder parts of the kingdom it is a mistake to plant American plants in shaded situations. They set their buds and bloom much better when exposed to

the sun. In hotter districts, a dell not overhung with trees, but having a north aspect, is the most suitable; and to look down on American plants in June in such a situation is a sight worth a struggle to produce, especially when standard plants of striking colours are interspersed among the dwarfs, giving light and shade and relief. A mixture of deciduous, or other less formal, shrubs, judiciously interspersed, rather improves the effect of Rhododendrons at all times. Any one who has seen the grand displays annually produced in London under canvas, will not easily rid his mind of the grandeur of the Rhododendron as a decorative plant.

CHAPTER X.

DECIDUOUS HARDY SPRING-FLOWERING SHRUBS, SUITABLE FOR BEDS AND SHRUBBERY BORDERS, ETC.

ALTHOUGH our primary object in this work has been to treat of what is generally termed and understood as the flower-garden proper, we hope it may prove useful to many of our readers who are unacquainted with flowering shrubs, and deciduous spring-flowering shrubs in particular, to append a list of the most useful and beautiful of them, which generally flower in early spring, and onwards to the end of May. Some of the best of the dwarfer-growing varieties are very suitable for beds, and might be so used with advantage where spring variety is an object. All of them are excellent for planting in shrubberies, and are relieved, and give relief to, their more sombre evergreen rivals. Deciduous spring-flowering shrubs do not generally receive that amount of care and good culture which their merits deserve. Their delicate tints when in flower, and more graceful and airy appearance as compared with evergreens—beautiful and useful as the latter are—demand more attention ; and were the same amount of culture and care bestowed on them which has been deservedly bestowed on evergreen shrubs and conifers, they would well repay all that could be done for them. They bloom at a time when the surroundings of the spring garden are more

tame than that of the autumn garden, which latter season brings with it all the gorgeousness of varied tints in fruits and foliage; and even heavy and splendid masses of evergreens, which form the boundaries of flower-gardens, would look all the richer, and less gloomy, were they lightened up with a due proportion of the more abundant flowering deciduous shrubs, which generally do well in most localities and soils. The following list comprises a very effective selection:—

Deciduous Hardy Spring-flowering Shrubs, suitable for Beds and Shrubbery Borders, etc.

Those marked w are suitable for walls.

		Colour.	Feet.	Time of Flowering.
Require rather a warm situation.	Amygdalus nana (the almond), .	Rose.	2 to 3	Mar. & April.
	Amygdalus nana alba, . . .	White.	2 to 3	Mar. & April.
	Amygdalus incana (hoary almond),	Red.	2 to 3	Mar. & April.
In a sheltered place.	Cerasus Japonica,	Pale blush.	2 to 4	Mar. to May.
	Cerasus Japonica multiplex, . .	Pink.	3 to 4	Mar. to May.
	Cerasus Japonica alba flore-pleno,	Double white.	3 to 4	Mar. to May.
	Cerasus Sinensis,	Red and white	2 to 3	April & May.
	Cydonia Japonica,	Scarlet.	5	Mar. to May.
	Cydonia Japonica alba,	White.	5	Mar. to May.
	Cydonia Japonica flore-semipleno,	Red.	5	Mar. to May.
	Cydonia Japonica grandiflora, .	Red.	5	Mar. to May.
	Cytisus incarnatus,	Fleshy purple	5 to 7	May.
	Daphne mezereum,	Red.	3 to 4	Mar. & April.
	Deutzia gracilis,	White.	3 to 4	April & May.
	Dirca palustris,	Yellow.	3 to 4	March.
	Forsythia viridissima,	Yellow.	6	Mar. & April.
	Fothergilla alnifolia,	White.	3	April & May.
	Genista triquetra (creeper), . .	Yellow.	½	April to June.
	Genista prostrata,	Yellow.	1	May.
	Hamamelis Virginica,	Yellow.	5 to 15	Nov. to Mar.
	Jasminum nudiflorum,	Yellow.	3 to 5	Winter and spring.
	Lonicera Tartarica,	Red.	6	April & May.
w	Magnolia conspicua,	White.	..	Feb. to April.
w	Magnolia conspicua Soulangeana, {	White, tinged with purple.	..	Feb. to April.
w	Magnolia purpurea,	Purple.	3 to 5	Mar. to May.
w	Myrica gale (Sweet Gale or Bog Myrtle),	Brown.	2 to 4	Feb. & March.
	Persica vulgaris flore-pleno, . .	Rose.	10	Mar. & April.
	Persica vulgaris flore-pleno alba, .	White.	..	Mar. & April.
	Persica vulgaris flore-pleno rosea, .	Dark Rose.	..	Mar. & April.
	Persica vulgaris flore-pleno camel- lia flowered,	Crimson.	..	Mar. & April.
	Philadelphus latifolius,	White.	6 to 8	May.

	Colour.	Feet.	Time of Flowering.
<i>Prunus triloba</i> ,	White.	..	May. ..
<i>Pyrus arbutifolia</i> ,	White.	4	May.
<i>Pyrus floribunda</i> ,	White.	4	May.
<i>Pyrus grandiflora</i> ,	White.	4	May.
<i>Pyrus pubens</i> ,	White.	4	May.
<i>Ribes aureum</i> ,	Yellow.	6	April & May.
<i>Ribes punctatum</i> ,	Yellow.	6	April & May.
<i>Ribes sanguineum</i> ,	Rosy red.	6	Mar. to May.
<i>Ribes sanguineum flore-pleno</i> ,	Rosy red.	6	Mar. to May.
<i>Ribes sanguineum atro-rubens</i> ,	Purple.	6	April & May.
<i>Ribes aureum præcox</i> ,	Yellow.	6	April & May.
<i>Syringa vulgaris</i> (lilac),	Various.	..	May & June.
<i>Syringa vulgaris</i> (dwarf French, white),	White.	6	April & May.
<i>Syringa vulgaris</i> (dwarf French, } purple),	Purple.	6	April & May.
<i>Syringa Persica</i> ,	Purple.	4 to 6	April & May.
<i>Syringa Persica alba</i> ,	White.	4 to 6	April & May.
<i>Syringa Persica laciniata</i> ,	Purple.	4 to 6	April & May.
<i>Syringa Persica salvifolia</i> ,	Purple.	4 to 6	April & May.
<i>Syringa rothomagensis</i> ,	Purple.	6 to 8	April & May.
<i>Spiræa ariefolia</i> ,	{ Creamy } white. }	6 to 8	June.
<i>Spiræa callosa</i> ,	Pink.	3 to 4	June.
<i>Spiræa Douglassii</i> ,	Purple.	4	June.
<i>Spiræa Lindleyana</i> ,	Cream.	6 to 10	..
<i>Spiræa levigata</i> ,	White.	3 to 4	May & June.
<i>Spiræa opulifolia</i> ,	White.	8	June.
<i>Spiræa bella</i> ,	Rose.	3 to 4	May & June.
<i>Spiræa thalictroides</i> ,	White.	2 to 3	May & June.
<i>Viburnum opulus</i> (Guelder Rose),	White.	6 to 12	May & June.
<i>Viburnum opulus sterile</i> ,	White.	6 to 12	May & June.
<i>Weigela rosea</i> ,	Rose.	4	April & May.

The heights given are the heights which they are supposed to attain under cultivation in this country. All those which are disposed to form dense growths should be looked over annually, either immediately they are done flowering or when they have shed their leaves, and be thinned partially out, so as to prevent their becoming masses of weak and unproductive spray, which cannot get properly ripened, and, as a consequence, do not produce flowers in perfection. All deep digging amongst their roots should be avoided; but a top dressing of decayed leaves, or a little manure slightly pointed into the surface of the ground, after they have been planted for some years, is of great advantage to them.

Select List of Hardy Spring-flowering Evergreen and Sub - Evergreen Shrubs, suitable for Beds and Shrubbery Borders.

'w' suitable for walls.

		Feet.	Colour.	Time of Flowering.
w	Berberis fascicularis,	6	Yellow.	March to May.
w	Berberis empetrifolia,	3 to 5	Yellow.	Dec. to March.
w	Berberis Darwinii,	3 to 5	Yellow.	April and May.
w	Berberis dulcis,	4	Yellow.	April and May.
	Berberis coccinea,	1 to 3	Yellow.	Nov. to April.
	Daphne Cneorum,	1	Light purple.	{ April, and again { in November.
	Daphne Ponticum,	3 to 4	Greenish yellow.	April and May.
	Daphne laureola, Spurge } Laurel, }	3 to 4	Greenish yellow.	January to March.
	Garrya elliptica,	6 to 12	Greenish yellow.	Nov. to March.
	Mahonia fascicularis,	3 to 5	Yellow.	March and May.
	Mahonia repens,	3 to 5	Yellow.	April and May.
	Ulex Europea flore-pleno } (Double Whin), Furze } or Gorse, }	3 to 6	Yellow.	February to May.
	Viburnum tinus Laure- } tinus, }	3 to 12	White.	Nov. to March.

Berry-bearing Evergreens, suitable for Beds and Shrubbery Borders in Winter and early Spring.

		Feet.	Colour of Berries.
w	Arbutus unedo crispus, . . . . .	..	Scarlet.
	Arbutus unedo salicifolius,	3 to 5	Scarlet.
	Arbutus unedo microphyllus,	4 to 6	Scarlet.
	Aucuba Japonica,	4 to 8	Scarlet.
w	Cotoneaster microphylla,	3 to 4	Scarlet.
w	Cotoneaster buxifolia,	3 to 5	Scarlet.
	Cotoneaster thymifolia,	2 to 3	Scarlet.
	Cotoneaster marginata,	3 to 4	Scarlet.
	Gaultheria procumbens,	1	Red.
	Gaultheria Shallon,	2 to 3	Purple.
	Ilex (Holly), in variety, . . . . .	..	Scarlet yellow.
	Mahonia Aquifolia,	3 to 5	Bluish purple.
w	Pyracantha crenulata,	4 to 6	Red.
	Ruscus aculeatus,	3	Red.
	Skimmia Japonica,	2 to 3	Scarlet.
	Pernettya mucronata,	2 to 3	Red.
	Pernettya angustifolia,	2 to 3	Red.
	Pernettya speciosa,	1 1/2	Red. ..
	Vaccinium vitis idæa,	1	Red.
	Symphoricarpos racemosus (snowberry),	3 to 6	White.

266 VARIEGATED EVERGREENS AND CLIMBERS.

Hardy Evergreen Shrubs with Variegated Foliage, suitable for Beds and Shrubbery Borders in Winter and Spring.

Aucuba Japonica variegata.	Ilex lutescens albo-picta
Aucuba Japonica mascula variegata.	Ilex lutescens ferox argentea.
Aucuba Japonica limbata.	Ilex lutescens Queen.
Aucuba Japonica multomaculata	Juniperus sabina variegata.
Biota aurea.	Lavandula (Lavender) spica variegata.
Buxus (Box) argentea.	Osmathus ilicifolius variegatus.
Buxus aurea.	Osmathus ilicifolius variegatus nanus.
Cupressus Lawsoniana variegata.	Rhododendron ponticum variegatum.
Calluna vulgaris (Ling or Heather) variegata.	Retinispora obtusa aurea variegata
Calluna vulgaris aurea.	Santolina chamæcyparissus.
Euonymus Japonica argentea.	Thujaopsis Dolabrata variegata.
Euonymus Japonica aurea.	Taxus (Yew) baccata variegata.
Hedera helix (ivy) — the bush-varieties.	Taxus baccata fastigiata aurea variegata.
Ilex (Holly) lutescens albo-marginata.	
Ilex lutescens aureo-marginata.	

Climbers suitable for Covering Walls, etc.

'E' evergreen.

		Feet.	Colour.	Time of Flowering.
E	Ampelopsis hederacea, . .	30 to 50	Crimson.	Fol. in autumn; fine.
	Aristolochia siphoc, . .	30 to 50	Brown.	Fine foliage.
	Bignonia capreolata, . .	15	{ Reddish yellow.	{ June and July; roots require protection in winter.
	Bridgesia spicata, . .	30 to 50	White.	
	Clematis cœrulea, . .	10	Blue.	May and June.
	Clematis flammula, . .	20	White.	July to September.
	Clematis Fortunei, . .	..	White.	
	Clematis Hendersonii, . .	8 to 10	Purple.	June to September.
	Clematis lanuginosa, . .	10	Blue.	June and July.
	Clematis montana, . .	20 to 30	White.	May and June.
	Clematis azurea grandiflora, . . . }	10	Blue.	May and June.

		Feet.	Colour.	Time of Flowering.
E	<i>Clematis Jackmani</i> , . . .	10	Purple.	June to Nov.
	<i>Clematis Standishii</i> , . .	10	Blue.	..
	<i>Clematis viticella venosa</i> , .	..	Reddish purple.	June to August.
	<i>Hedera helix</i> (Ivy), . . .	..	..	..
	<i>Hedera arborescens albo-lutea</i>, . . .	..	..	..
	* <i>Hedera canariensis aurea</i> , .	..	{ Gold variegated foliage. }	..
	* <i>Hedera marginata argentea</i> , .	..	Silver.	..
	* <i>Hedera crenata</i>, . . .	..	Green.	..
	<i>Hedera donerailensis minor</i> , .	..	Green.	..
	<i>Hedera minor marmorata</i> , .	..	Silver.	..
	* <i>Hedera Pennsylvanica</i>, . .	..	Green.	..
	<i>Hedera poetica</i>, . . .	..	Green.	..
	* <i>Hedera latifolia maculata</i> , .	..	{ Gold and silver variegated. }	..
	<i>Hedera aurea maculata</i>, . .	..	Gold.	..
	<i>Hedera digitata</i>, . . .	..	Green.	..
	<i>Hedera marginata pulchella</i> , .	..	Silver.	..
	<i>Hedera palmata</i>, . . .	..	Green.	..
	* <i>Hedera palmata aurea</i>, . . .	..	Golden.	..
	* <i>Hedera sagittifolia</i>, . . .	..	Green.	..
	* <i>Hedera foliis aureis</i>, . . .	..	Gold.	..
E	* <i>Hedera rhombea variegata</i> , .	..	Green.	..
	* <i>Hedera Algeriensis variegata</i> , .	..	Silver.	..
	<i>Hedera canariensis nova</i>, . .	..	Green.	..
	<i>Hedera Ragneriana</i>, . . .	..	Green.	..
	<i>Jasminum officinale</i> , . . .	20	White.	July to Sept.
	<i>Jasminum nudiflorum</i> , . . .	8	Yellow.	Nov. to April.
	<i>Jasminum revolutum</i> , . . .	12	Yellow.	June to October.
	<i>Lonicera Japonica</i> (Japan Honeysuckle), . . .	20	White and red.	June to Sept.
	<i>Lonicera trachypoda</i> , . . .	20	Splendid foliage.	..
	<i>Lonicera</i> (<i>Periclymena</i>) (common Honeysuckle), .	20	Yellow and red.	June and July.
E	<i>Lonicera sempervirens</i> , . .	10	Red.	May to August.
	<i>Lonicera aureo-reticulata</i> , .	10	{ Beautiful variegated flowers, suitable for beds and edgings. }	..
	<i>Lycium Europæum</i> , . . .	20	{ Purple—fruit } red.	May to August.
	<i>Lycium barbarum</i> , . . .	20	..	..
	<i>Passiflora</i> (Passion Flower) <i>cerulea</i> , . . .	10 to 20	White and blue.	July to October.
	<i>Periploca Græca</i> , . . .	15 to 20	Purple.	July to August.
	<i>Tecoma radicans</i> , . . .	20 to 30	Orange.	August and Sept.
	<i>Vitis Labrusca</i> (wild vine), .	..	{ Leaves change to various colours. }	..
	<i>Vitis riparia</i> , . . .	20 to 30	..	..
	<i>Vitis cordifolia</i>, . . .	..	..	..
	<i>Wistaria Sinensis</i> , . . .	50 to 200	Pale blue.	May and June.

All suitable for beds and edgings to beds.
Those marked * are the strongest and quickest growers.

Shrubs suitable for Covering Walls.

		Feet.	Colour.	Time of Flowering.
	<i>Cercis siliquastrum</i> , . . .	20 to 30	Purplish pink.	May.
E	<i>Ceanothus azureus</i> , . . .	5 to 10	Blue.	May to August.
	<i>Chimonanthus fragrans</i> , . . .	6 to 8	Yellowish.	January to March.
	<i>Cistus ladaniferus</i> , . . .	5 to 6	White.	June and July.
E	<i>Crataegus pyracantha</i> (Ever- green Thorn), . . .	..	White.	May—berries red.
	<i>Cydonia Japonica</i> , . . .	5 to 6	Scarlet.	Greater part of year
E	<i>Escallonia macrantha</i> , . . .	6 to 8	Reddish purple.	July to Sept.
E	<i>Jasminum fruticans</i> , . . .	6 to 8	Yellow.	May to October.
E	<i>Laurus nobilis</i> (sweet bay), . . .	6 to 20	..	..
E	<i>Ligustrum Japonicum</i> au- reo-variegatum, . . .	6 to 10	{ White flowers, var. foliage. }	June and July.
E	<i>Magnolia grandiflora</i> , . . .	10 to 20	White.	July and August.
E	<i>Magnolia Exmouthii</i>, . . .	..	..	..
E	<i>Robinia hispida</i> , . . .	6	Rose.	May to Sept.
E	<i>Photinia serrulata</i> , . . .	12	White.	April and May.
E	<i>Rhamnus alaternus</i> , . . .	10 to 15	Green.	April and June.

In addition to those marked w in the other selections, these shrubs are suitable for covering walls and trellises.

*Summer Climbers that can be easily raised from Seed,
and that are suitable for Covering and Blooming
on Walls, etc., in Summer and Autumn.*

Eccremocarpus scaber, orange, bunches of trumpet-shaped flowers.

Cobæa scandens, purple flowers, elegant foliage.

Cobæa scandens variegata, variegated foliage; very pretty.

Convolvulus major.

Loasa aurantiaca, orange.

Lophospermum Hendersonii, rosy carmine.

Lophospermum scandens, rose.

Lophospermum spectabile, dark rose.

Maurandya Barclayana, violet.

Maurandya Barclayana alba, white.

Maurandya purpurea grandiflora, purplish crimson.

Tropæolum canariense (Canary Creeper), yellow; fine for covering large spaces quickly.

Tropæolum. See also Climbing Varieties in list of *Tropæolums*, all of which are excellent for covering spaces quickly.

Tropæolum speciosum: a perennial tuberous-rooted variety; hardy in most places.

The whole of these are also suitable for planting round

the sides of vases and baskets for weepers. They should be sown in February in a gentle bottom heat, and afterwards potted singly, two or three in a 4-inch pot, and forwarded in heat till strong and well rooted; then, when well hardened off, planted out about the end of May.

Besides these, the following are suitable for planting round the sides of vases and baskets:—

<i>Alyssum variegatum</i> .	<i>Lobelias</i> .
<i>Convolvulus Mauritanicus</i> .	<i>Nierembergias</i> .
<i>Fuchsias</i> (of sorts).	<i>Petunias</i> .
<i>Gazania splendens</i> .	<i>Variegated Ivies</i> .
<i>Ivy-leaf Pelargoniums</i> (various).	<i>Verbenas</i> .
<i>Pelargonium Rollison's Unique</i> .	<i>Vincas</i> .
<i>P. Mangles' Variegated</i> .	<i>Rhodanthe Manglesii</i> .
<i>Heliotropes</i> .	<i>Phlox Drummondii</i> .
<i>Linaria cymbalaria</i> .	<i>Tropæolums</i> (dwarf-growing).

For winter weepers, all the more moderate-growing hardy evergreen climbers are suitable for planting round the edges of vases and baskets, such as *Ivies*, *Helianthemums*; while many of the *Saxifrages*, *Aubrietias*, *Alyssums*, and evergreen *Candytufts*, etc., furnish sufficient variety of lesser things for the edges of vases and baskets and raised beds.

The whole of the foregoing evergreen variegated and berry-bearing plants are exceedingly useful for mixed borders where winter and early spring effect is the object; and a good few genera can be selected from them to play an effective part in the winter and early spring, both in beds by themselves and in combination with what are known, and have been already treated of, as spring bedding plants. Where effect has to be studied immediately after the autumn flowers are removed, of necessity the chief portion of the plants used must be

evergreen shrubby plants. For however beautiful many of our spring-flowering subjects are in spring, they are, through a severe winter, oftentimes dejected enough in appearance. Some of the hardier-foliaged herbaceous plants can, however, be pressed into service, where winter effect is the point aimed at without reference to spring. When both seasons have to be studied, selections from both shrubby, bulbous, and perennial plants can be effectively combined. At the same time, where such has to be attempted, I would recommend, as is shown in the designs, that many of the beds, be composed exclusively of close-growing evergreen plants, such as the various Ivies, which are exceedingly beautiful for ground-works; and that into such beds, contrasting shrubs and other things, such as Coniferæ in a small state. Hollies of various-coloured foliage, *Garrya elliptica*, *Yuccas*, and berried plants, should be introduced. These, dotted into low closely-growing carpets of green and variegated foliage, would look exceedingly well, and have a distinct character, while these panel plants might be removed in time, and specimen *Pelargoniums* and other summer-flowering and ornamental foliaged plants could take their place, and thus add a distinct and interesting feature to the summer garden. Spring flowers might also play their part in such beds, by introducing them round the edgings, where a space might be preserved for them a foot or more in width, which, in the event of its being planted with bulbs, might be mossed over, or have some evergreen twigs stuck into it till the bulbs came up. For this purpose many plants could be used as ground-works and panel plants. For instance: a permanent bed may be formed of *Erica carnea*, which flowers throughout the winter and spring, with such

a graceful plant as *Yucca recurva pendula* as panel plants ; but as many such beds will be illustrated in a subsequent chapter, it is unnecessary to dwell more on them here, as a few illustrations teach this matter more fully and intelligently than words can.

CHAPTER XI.

ARRANGEMENT OF COLOURS.

It is probably a better understood, and in some respects an easier, matter to propagate and cultivate the necessary stock of plants to fill up a flower garden, than to arrange them according to the laws of colour, so as to produce effects that will satisfy the eye of taste. In many respects, even those who are best versed in the principles which ought to guide the gardener in this important matter have difficulties to contend with which are unknown to the most intelligent colour-theorist. One of those difficulties—and one that is not very easily overcome—arises out of the varieties of height and habit of the plants, which are to the gardener what paints are to the painter. Another very formidable one has often to be dealt with, in the unsuitableness of many garden designs, especially in the case of those where the beds are very large and too close together; or, what is equally unfavourable, they may be long and narrow, and much too near the points from which they can be critically viewed. Under such circumstances it is not unfrequently most difficult to apply the principles of either harmony or contrast of colours, and at the same time give essential prominence to symmetry.

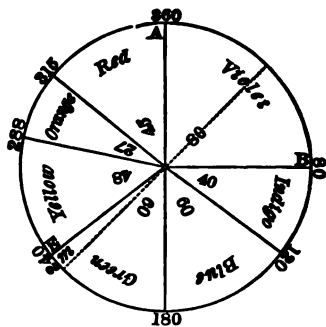
Modification is therefore forced upon the gardener; and consequently very much depends on good taste and

long and careful observation in combining plants of various heights, and in dealing with designs which are unsuitable for purely scientific arrangement. But at the same time there are few places—not even excepting the single bed of the cottager, or small group of the villa—which do not afford an opportunity to some extent for a definite system of arrangement. A single bed in an isolated position may be made to display the effects of either harmony or contrast, or both, in flower-gardening; and even where such difficulties as I have named exist, there is no doubt, as I have previously remarked, that glaring errors are to be avoided only by having a knowledge of the simple elementary principles which govern the harmony and contrast of colours. Experienced practitioners have generally by them a plentiful store of notes, carefully made in former years when the flowers were in their prime. Each combination of plants that, though not strictly according to scientific dicta, has been chaste and pleasing, has been carefully noted; and the planting of a flower-garden becomes to such a matter of much more ease and certainty than to the less experienced. But it is impossible to apply individual practice to a great variety of circumstances and designs, and for that reason theory is here of more than usual importance.

Arrangement of Colours according to the Law of Contrast.—The experiment of admitting a ray of sunlight through an aperture into a dark room, and after it enters the apartment making it pass through a triangular glass prism on to a white wall at the opposite side of the room, analyses the light, and shows us the various colours of which it is composed. Immediately on passing through the prism, it is dispersed, and forms on the

wall an oblong figure of seven different colours. This is, in fact, light analysed, and its component parts shown, analogous to the way a chemist acts upon matter. Newton, the great philosopher, has denominated these seven colours simple or homogeneous.

The better to understand the arrangement and relation of these prismatic colours, let them be printed on a circular card in the order and proportion exhibited by the prismatic spectrum and rainbow. The annexed diagram is the usual way of illustrating this arrangement. The circle is divided into 360 degrees, which allows space for each colour in the same proportion



as in the spectrum—namely, violet, 80°; indigo, 40°; blue, 60°; green, 60°; yellow, 48°; orange, 27°; red, 45°.

Here we have the simple prismatic colours arranged in the same order and proportions as are demonstrated by the prismatic experiment, only in a circular instead of an oblong form, in which latter, as produced by the prismatic rays, violet forms one extreme and red the other. Red, blue, and yellow have been termed the three primary colours, because the others can be produced by mixing these three in different proportions. And it will be observed that the other colours—violet, indigo, green, and orange—are intermediate in their arrangement in the spectrum.

Now, in order to ascertain correctly which are the

contrasting colours, we shall take violet, and wishing to find its contrasting colour, we have only to find out which colour is directly opposite to it on the diagram; and omitting the space occupied by violet, we have the arc A E B, whose centre is the point *m* in green, but near to yellow, which determines that the contrasting colour to violet is green with a little yellow mixed, or bluish green: and so on, by drawing a line from the centre of each colour to the centre of the remaining arc—the end of the diametric line—determines the contrasting colour.

M. Buffon a good many years ago made a very interesting discovery, which is practically very useful, and very closely approaches in correctness the diagram principle in determining the colours which contrast. He discovered that if a wafer be placed on a white sheet of paper, and gazed steadily at for a few seconds, and then the eye removed to another part of the paper, a spectrum of the same size as the wafer and of its contrasting colour is seen. The spectra are, however, rendered more distinct when the wafers are looked at on a dark ground, and the eye then directed to a white ground. This simple fact is the reason why black printing is more comfortably and easily read on a white ground than red, for red would have a contrasting green spectrum floating before the eye on a white ground; white being the contrast to black, the spectrum is prevented in such a combination. By this simple process, as well as by the aid of the diagram, the colours at the disposal of the flower-gardener can be arranged according to the law of contrast. The following is a table of the colours and their contrasts:—

Black, . . .	White.	Green, . .	Reddish violet.
White, . . .	Black.	Blue, . .	Orange.
Red, . . .	Green.	Indigo, .	Orange yellow.
Orange, . .	Blue.	Violet, .	Bluish green.
Yellow, . .	Indigo.		

These are the contrasting colours as determined according to Buffon's spectrum discovery; and it will be found that these results closely correspond with those determined by the rules of the diagram. The merest tyro will find the application of these rules of great service in the arrangement of flowers on the principle of contrast. Of course there are intermediate shades to be dealt with not embraced by the colours included in the spectrum; and just in proportion as these shades approach the various prismatic colours, so must the rules be modified and applied. Buffon's system can always be resorted to as a guide sufficiently correct for all practical purposes, and, if followed as closely as the various shades and different heights of plants will allow, cannot fail to be of great service in flower-garden arrangements.

In coming to the practical application of these rules, some may perhaps find that it is not so easy as at first appears to deal with colours which do not exactly agree with those of the prism; nevertheless, the rules still hold good, and can be applied with more or less of a decided result. In order to illustrate this, take one or two of our most popular grouping plants which have not a facsimile in our table of contrasting colours. Take, for instance, Purple King Verbena, which may be described as a reddish blue. Looking at the prismatic colours, this approaches nearest to blue; it is blue with a shade of red in it, the contrasting colour to which is

green and orange. The blue being in the ascendant in the Verbena, the contrasting plant must have orange in the ascendant as the contrast to blue; but the red in the purple demands a greenish shade, and, consequently, the contrasting plant must be a greenish yellow, such as we have in *Calceolaria amplexicaulis* and *C. canariensis*, etc.

Then, if we take an orange yellow, such as *Calceolaria aurantia multiflora*, or *Tagetes signata pumila*, we have orange yellow, or yellow with a shade of red, requiring for a contrast a greenish blue, and which is most nearly supplied in *Lobelia erinus speciosa*.

Our nearest approach to black is supplied by such plants as *Perilla*, *Nankinensis*, *Coleus*, *Beet*, and a few others. Now, if we describe them as reddish black, the contrast of this is greenish white, and this is supplied by such plants as *Koniga variegata*, *Dactylis glomerata variegata*, variegated *Pelargoniums*, etc.

From these illustrations it can be seen in how thoroughly practical a way the elementary rules can be applied. It is because of the law of contrast that the flowers of a scarlet *Pelargonium* are much more distinctly striking in the case of those varieties which have a dark green leaf without any variegation or zone, because green is the contrast to red.

The most accommodating colour for contrasting with others, with considerable distinctness, is white, or very light grey, such as *Cerastium tomentosum*, *Centaureas*, and *Cineraria maritima*,—all of which may be used as a contrast to all strong colours, such as crimson, bronzy crimson, deep scarlets, blues, and deep purples.

Arrangement of Colours according to the Law of Har-

mony.—Colours are said to harmonize when different shades blend insensibly into each other. This is easily detected by any one who has a perception of, or, as it is generally termed, an eye for colour. Harmonizing colours can be as readily determined by the use of the diagram, which has been given in order to show those that contrast. That which harmonizes with any original colour is always next the original, and between it and the contrasting colour, in the order of the diagram. Following out this, it will be seen that red is the harmonizing colour to orange, blue to violet, yellow to white, and so on.

Practically speaking, harmonizing colours are considered more easily detected than those which contrast. Take, for instance, red or scarlet, dark pink, pale pink, and white, and place them in the order named, and a pleasing harmony from red down to white is the result. The transition is gentle and beautiful—something like a plaintive melody in music. Then, again, take a purple-flowering plant with a shade of red in it, and place it near a crimson, or let a golden-leaved *Pelargonium* be associated with some of our lovely silvery-foliaged plants, and a most delicate and pleasing harmony is produced.

These examples are enough to show what is conveyed by the term harmony of colours; and there are few things that afford more pleasure to an eye, however slightly trained to colour, than the contemplation of the soft gradations that may be worked out in a bed of flowers associated according to the principle of harmony. It is somewhat degrading to the art, to look upon it merely as a means of embellishment capable of only tickling the eye.

Harmony and contrast may be illustrated with charming effect in one bed. What, for instance, can be more lovely than a centre of yellow, with a corresponding zone of white, finished off with a fringe of blue or purple? The two centre colours harmonize, while the blue contrasts. Or if two contrasting colours—yellow and blue—are mixed in the centre of a bed, and edged with red, which harmonizes with the orange, the effect is very fine. In filling a bed with three colours in distinct zones, the two harmonizing colours should be in the centre, and the contrasting colour as a margin. This principle of planting is particularly applicable to an isolated place, because the eye comprehends and grasps the design better with the soft colour in the centre than at the margin. With a strong colour for a centre, the eye is tyrannically attracted to the weight of heavy colouring.

One of the most effective combinations of this mixed principle in one bed that I ever saw was the key-bed of a large design. The centre was of *Bijou* (variegated *Pelargonium*), with a zone of golden-chain *Pelargonium*. So far this was harmony. Then there was a border 5 feet wide, all round the bed, of *Gazania splendens* and blue *Lobelia* mixed, and a fringe round all of *Little David Pelargonium*. At intervals of 8 feet, in the centre of the border of *Gazania* and *Lobelia*, were single plants of *Centaurea Ragusina*. In this composition the variegated *Pelargonium* harmonized with the golden *Pelargonium*, the golden *Pelargonium* contrasted with the blue, and the fringe of scarlet harmonized with the orange, while the *Centaurea* contrasted with the blue, and was in harmony with the orange. There was a repose and beauty in this gigantic bed, which required a practised eye to dis-

cover and appreciate, and it was exceedingly suitable as a key or centre bed, which should always be soft and quiet.

GENERAL REMARKS ON THE PLANTING OF BEDS AND GROUPS OF BEDS.—When plants of various heights and habits have to be dealt with, the symmetry of the bed must not be sacrificed, even in deference to the laws of colour which certain plants will set at defiance. Taste must in such cases step in and take the place of the rigid rule of science; but it requires much observation and practice to avoid incongruous arrangements. The late Dr. Lindley once wrote some articles in the *Gardeners' Chronicle*, contending that symmetry was of greater importance than any arrangement of colours, and pointed to the capricious ways in which nature arranged various colours in individual flowers. But he might also have pointed to many combinations which are in accordance with the recognised principles of harmony and contrast—even to the 'Crimson-tipped Daisy,' with its yellow disc and white zone in beautiful harmony, and its crimson tips—in illustration of the principles both of contrast and harmony. To a certain extent the learned Doctor was correct, but it would be a sad sacrifice to accept his position as a rule.

Where plants are of various heights, and when it is desirable to associate a dwarfer and taller plant in one bed, much can be done towards achieving this successfully, by throwing a portion of the soil from that part of the bed or border where the taller things are to be planted on to the space designed for the dwarfer. I frequently resort to this rather than sacrifice an arrangement. As a general rule, however, the taller plants

should be put in the largest beds, and *vice versa* ; and all beds exceeding 12 or 14 feet in diameter should be planted with two or more colours, in order to relieve the heavy masses of colour ; and, as already referred to, the strongest colours should be at the margin, in the case of isolated beds particularly. In planting a group of beds on the complementary principle, the centre or key bed should never be the most brilliant, as it is often made. The stronger colours should be towards the extremities of the design ; for, as any one who has studied the matter knows, with soft tones towards the centre, and bright ones towards the outside, the eye takes in, and the mind can master, the design much better than with the bold colours at the centre.

All geometrical designs should have each corresponding bed planted not only with the same colours, but with the same plants, if possible, otherwise a jar will be produced, and that unity of expression, which should characterize all such designs, will be destroyed.

Regarding the question as to where the principles of harmony and contrast are most in keeping, it is my opinion—and I have arrived at the conclusion after much observation—that for a single bed, or small groups of beds, in a quiet sequestered spot, where the design has to be studied close to the eye, a gaudy contrasting picture should be avoided, and the harmonizing principle adopted. This may sound strange to some who see naught in what we are discussing but a stare, much as the woodman sees a stick where the poet beholds a tree of beauty ; but there is something more than a stare in a harmonious group of flowers in a quiet nook,—there is a calm benignant beauty which goes directly to the heart. On the other hand, where the garden extends

over a wide expanse, and has to be studied from a distant point, or where there are long stretches of borders, there must be a measure of boldness and distinctness. Here every line and figure should live and sparkle with expression, or it will not be easy to follow out and appreciate the length and breadth of the design, as if it were a small picture under the eye. Not only must there be concentration and distinction given to the chief parts of such a garden, but every minor detail must have its unity also ; and for this purpose the planting must be executed to be viewed principally from some particular points.

Generally speaking, in planting groups of beds, the mixing of different colours in one bed is not to be recommended, although some mixtures, judiciously relieved, are very lovely in themselves when closely viewed ; and even as ground-works, some mixtures are very effective when relieved with panels and edgings of distinct colours. In planting long borders, I have a great objection to nibbling them up into fantastic little beds, with gravel walks between the figures. For effect, an entire surface in flowers, with relieving graceful specimen plants, is preferable ; and even then, the more simple the design, if properly apportioned and balanced, the better. When the entire surface is thus devoted to flowers, a greater facility for yearly change of design and arrangement is afforded.

In the case of long stretches of borders to be planted entirely with flowers on the grouping principle, the panel system of planting, which I believe I was the first to practise in long borders, is preferable to the bald and uniform ribbon system. The chief feature of panel-planting consists in having a ground-work of one colour,

relieved with panels of plants entirely distinct from the ground-work, which should, to be effective, be bounded by distinct lines. The panels may consist of a group of plants slightly elevated above the ground-work, or of one large specimen plant, or they may consist of the two combined—that is, a panel with a taller and fine-foliaged plant in its centre. In this way variety and interest are given, and greater variety of design can be carried out; and, by using graceful-foliaged plants for panels, or in the centre of panels, the monotony which is to some extent chargeable to ribboning is relieved.

In the case of many gardens composed of large beds too closely packed together on gravel, it gives variety and relief to otherwise too heavy masses, if a specimen of any tall graceful-foliaged plant is set in the middle of each bed, and zoned off with an appropriate colour. Such specimens give relief to unwieldy designs, such as many a gardener has to deal with.

A promiscuous collection of herbaceous and other flowering plants should never be planted in any number of the beds which form part of a geometric group, with the remainder of the beds planted in distinct masses of colour. When it is desirable to carry out the mixed-border system, and circumstances render it a matter of necessity to locate them not far from those beds or borders which are planted in groups, they should, if possible, occupy the boundary of the garden, and be divided from the others by a breadth of either gravel or grass, or both, to prevent the one style from clashing with the other. If, however, it be possible to devote distinct and entirely separate positions to the two systems, all the better: the one does not then interfere with the other, and they form a pleasing variety and

relief to the mind. Besides this, the parterre borders can be filled up for either winter or spring, without interfering with the herbaceous plants.

To prevent being misunderstood in the foregoing remarks on the arrangement of flowering plants of various colours in beds and borders, it may be well to state that so many fantastic beds, cut out geometrically or otherwise, on a space of grass or gravel, and filled with flowers, do not constitute my ideal of a flower-garden, not even though in outline they embrace all the standard 'lines of beauty.' My aim here is to assist the inexperienced in properly arranging various colours in beds and borders as *one* of the objects on which depends the beauty of a flower-garden, and one which lies more strictly within the province of the practical gardener than any other matter that belongs to flower-gardens in general. To give rules for the laying out of a flower-garden in its entirety does not range within the design of this work, although groups of beds and borders which are considered necessary to practically illustrate the principles which have here been laid down are given. After all, the disposition of flowering plants must be looked upon as the crowning touch of dress to a flower-garden; and the talent that can elaborate the flowery part of a garden may justly claim to rank side by side with that which produces a garden where flowers can be disposed of to advantage, and which is yet beautiful when not tricked out in holiday attire. Some flower-gardens are in themselves essentially paltry, and any amount of flowers will not make them pleasing, not even in combination with contortions of pounded bricks or glass. To decorate such malformations with flowers is much like placing jewellery on a corpse. They are

in such cases flowers in deep mourning, or degraded by being disassociated from their proper allies.

In large domains, where there are heavy boundary lines of graceful vegetation, I cannot join with those who object to heavier masses or even long level borders of flowering plants, provided such be relieved with plants of graceful forms and gentler hues, but not mixed up into one unmeaning jumble, which, whether viewed from an eminence or from a distant point, looks like a garden gone mad ; or as if the genius of confusion had culminated in sowing broadcast, and in awful mixture, the whole world of alpine, herbaceous, and annual plants. Order, principle, and taste should make manifest that a flower-garden is emphatically a work of art.

CHAPTER XII.

ARRANGEMENT AND PLANTING OF BEDS AND GROUPS OF BEDS.

HAVING entered with considerable minuteness into the consideration of the principles which I conceive should guide the flower-gardener in the arrangement or grouping of flowering plants in geometrical designs, it will be the less needed to enter very extensively into the practical details of the subject. In conjunction with what has already been advanced, a few practical illustrations of planting the groups of beds which have been prepared specially for this object for the various seasons of the year, will, we conceive, be quite sufficient to illustrate the principles already treated of. Besides the planting of these as distinct groups, each bed of which relatively bears upon its fellow, a good many ways will be shown for planting effectively single beds and borders.

It has already been stated that it is not a part of our present object to enter into the laying out of gardens and grounds in their entirety. The designs here furnished are principally intended to serve the purpose of showing how to plant geometrical gardens effectively. The designs are, however, submitted as indicative of what, to my mind, is well adapted for carrying out the style of flower-gardening, which has for its especial

feature, combinations of flowering plants. The lines are, on the one hand, removed from the stiffness and formality of what may be termed the Chinese puzzle style; and, on the other, from the minute twirlings and contortions which, however well they may look to the inexperienced planter, have been appropriately termed 'gardening on tea-trays.' The fine intricacies of expert compass work, as every practical flower-gardener knows, are most difficult to deal with satisfactorily in the garden.

Design No. 1. is the only one which I have furnished with surroundings; and I have done this, in order to show how a small piece of ground, which may be the sole area available for flower-gardening, may be disposed of as a united whole, affording scope for variety, while each part at the same time helps to enhance the beauty and interest of the others. It is alike suitable for having the centre group of nineteen beds in a sunk panel, while the surrounding circles are on a terrace above, and all surrounded with a shrubbery. The group is supposed to be suitable for either grass or gravel as a ground-work. Although exceedingly partial to the softening influence of the green, there is no question that colours and plants suitable for beds of this description are more telling and effective on gravel; and the harmony and contrasts existing between their various forms and colours are more largely neutralized on a verdant ground-work, than when separated by a quiet-coloured gravel.

In first considering how such a cluster of beds as is represented by this design is to be planted, and in arriving at a tolerably accurate conclusion as to the effect certain colours will produce, I would strongly recommend a simple method that I adopt, and which

no brush-colouring, however cleverly executed, can approach for correctness. First, let the walks or ground-work be coloured, if it be gravel—as nearly as possible the same as it exists in the garden when in a high state of keeping,—and then colour the beds of a verdant green colour throughout. On this green, which is designed to represent the foliage of the plants, strew a few petals of the flowers, leaving green dots uncovered here and there. This will give an idea of what the plants look like when in bloom in the beds—much more correct and natural than can be given by water-colouring.

In planting such a design as this, which is strictly geometric, and constructed on the principle of concentric rings, the first thing that claims consideration is, whether it has mostly to be viewed, studied, and enjoyed from a somewhat distant point, or close to, or under the eye. This, in my opinion, ought to decide whether the planting should be executed on the principles of harmony or of contrast. If to be viewed close to the eye, to plant it in strong contrasts will undoubtedly make it striking. But it will crash and thunder upon the eye and mind much as a railway gallop would upon the ear, when thundered out by a brass band and kettledrums in a room. The mind that does not long enjoy harshness would soon wish that the garden should be moved away to some extent, or wish to get sufficiently removed from it to have its harshness toned down by intervening space.

Those who have not trained their eye to grouping of this sort, nor studied the matter, would not unlikely be very much struck with strong contrasts, viewed even so near—much the same as the rustic's untrained ear would appreciate, notwithstanding the harshness which only distance could overcome, the thundering performance of

the brass band. Planted on the harmonic principle, it can be studied with growing enjoyment, viewed ever so near. It would then stream upon the eye like the mellow tones of the lute; and the longer we contemplate it, the more beautiful it would appear. When near to the eye, harmony should prevail.

But to plant for distinct and more distant effect, and if the mind is to appreciate all its lines and hues with anything like distinctness, every line of it must be laid down on the rule of strong contrast. This, for the design to be distinctly enjoyed from a distant point, is indispensable. The distance sufficiently softens down its hard tones.

And looking at the group as designed on the principle of concentric rings, the same principle, to be most effective in the distance, must be strictly adhered to, especially when viewed from an elevated point. It, however, affords an opportunity of planting on the triangular principle—as will be illustrated presently,—which, although very effective, and well worth adopting occasionally, falls short of the effectiveness of that which is in more rigid harmony with the design, although the triangular principle affords room for greater variety of plants, which is an object, supposing this were all or the chief part of a flower-garden.

The following are some of the ways in which these remarks can be practically illustrated:—

Design No. 1.

Bed No. 1.—Any of the yellow or orange-yellow *Calceolarias* enumerated in the list given; *C. aurantia multiflora* and *C. canariensis* are our own favourites. If the latter be used, edge it with a band of blue *Lobelia speciosa* 18 inches wide. The former being a taller grower, requires a taller-

growing edging; and *Verbena Purple King* contrasts very well. Dark-foliaged plants, such as *Perilla*, *Iresine Herbstii*, and, where they do well, *Amaranthus melancholicus ruber* and *Coleus Verschaffeltii*, contrast well with the yellows.

- 2, 2, 2, 3, 3, 3.—Planting on the principle of concentric rings, these should be planted all the same; and, to contrast with the yellow, No. 1—for lasting autumnal effect, and especially if No. 1 be edged with blue *Lobelia*—choice would fall upon *Verbena venosa*, where it does well. But *Verbena Purple King*, or purple *Intermediate Stock*, would do very well. The edging to these six beds, to be a contrast to the centre if purple, is a greenish-yellow or white, which also contrasts moderately with the edging of No. 1, and so gives distinctness on either or both sides. This we have supplied in variegated *Pelargoniums*—gold and silver—and *Polemonium cæruleum variegatum*. The centre bed being yellow, we should here prefer the silver varieties, such as *Mangles*, with pale pink flowers, or *Flower of Spring*; and *Dactylis glomerata variegata* and *Koniga variegata* would also answer.
- 4, 4, 4, 5, 5, 5.—Variegated *Pelargoniums* having a pale pink flower, such as *Silver Queen*, *Mangles' Variegated*, or *Flower of Spring*; here *Viola cornuta*, an excellent edging plant, would come in effectively for a band to these light beds. *Iresine Herbstii*, or any strong contrasting colour to show off the light centre, would answer well.
- 6, 6, 6, 7, 7, 7.—Being the boundary beds, should be planted with a bright colour, such as *Pelargonium Tom Thumb*. P. Sutton's *Perfection* or *Stella* coming in contact with both the purple and the pink or light colours in front and on either side, it would be difficult to say whether the crimson or scarlet shade should be placed in these beds. Our own inclination would lead to *Tom Thumb* as the type of a good bedding habit; but *Stella*, or any of the green-leaved crimson zonales, would also be appropriate. If *Tom Thumb* or any other green-foliaged variety be chosen, and especially if a crimson or dark-foliaged plant be used for edging to beds 4 and 5, we would use *Viola cornuta*; but if *V. cornuta* be placed as an edging to the light beds, *Cerastium tomentosum*, or any of the dwarf light-foliaged plants, would come in admirably.

Planted in this way, the design would be very expres-

sive when viewed from a distance, and every line in it could be distinctly appreciated. If the centre bed No. 1, which is purposely shown of sufficient width to admit of a central object, such as a vase, or statue, or fountain, have such an object in it, the yellow would then be lighter, and the band of blue should not be more than 1 foot wide. Supposing that there is no permanent object as a centre, a graceful specimen plant about 3 feet high would come in well, such as *Yucca recurva pendula*, *Dracæna indivisa*, or *D. Australis*. Then, to correspond with this, every bed should have an appropriate specimen. In the centre, 2, 2, 2, 3, 3, 3, we would place a single plant of *Yucca aloifolia variegata*. In 4, 4, 4, 5, 5, 5, a nicely grown specimen of India Rubber plant, or *Coleus Verschaffeltii*, or even *Perilla*, would come in effectively; and in the Scarlet *Pelargonium* beds, a specimen *Centaurea Ragusina*, raised so as just to leave its lower leaves resting on the surface of the *Pelargoniums*, would do remarkably well. These centre objects must not be too high, or they will obstruct the outline of the design when viewed from a distance, and especially if the point of view be of the same level: from $2\frac{1}{2}$ feet above the surface of the yellow in the centre bed, sloping down to little more than a foot above the outside *Pelargonium* beds, is sufficiently high for a design of this extent.

It may be objected to this concentric principle of planting, that it does not allow of much variety of plants. This is readily admitted; but it is not recommended to be followed out every year in succession, especially if this group be supposed to be the only one in the grounds. It is, nevertheless, by far the most appropriate and striking principle of planting, and particularly to be recom-

mended, if other parts of a flower-garden afford scope for a variety of planting. More variety can, however, be easily imparted to it, without any violation of principle. By putting the edgings that have been recommended 18 or 20 inches in width, and finishing next the walk with a thinner streak of colour, a thin line of *Cerastium* put as an edging to the blue in No. 1; a band of crimson King Verbena round the light band in bed 2's and 3's; an edge of gold *Pelargonium* or orange *Gazania splendens* round the *Viola cornuta*, or dark-foliaged bands of 4's and 5's; and with *Viola cornuta* as a band for 6's and 7's, then an edging of *Cerastium*, or *Viola cornuta*, or Yellow Pansy, would be suitable.

To plant effectually such a garden as this with plants that require much less trouble to propagate and grow them well, may be an object of considerable importance to many. We are not, however, presuming just now that this applies to those who have not a glass-house and pit or frame or two at command. A splendid effect may be very cheaply produced by filling the beds as follows:—

- Bed No. 1.*—*Tagetes signata pumila*; banded with purple Intermediate Stock, Barret's crimson Beet, or *Viola cornuta*; edged with *Koniga variegata* or *Cerastium tomentosum*.
- 2, 2, 2, 3, 3, 3.—Purple Stock, *Ageratum Mexicanum*, or *Nepeta teucrifolia*; banded with *Dactylis glomerata variegata*; edged with *Pelargonium Tom Thumb* or Little David.
- 4, 4, 4, 5, 5, 5.—White Intermediate Stock; banded with *Tropæolum coccineum* (scarlet), or with *Nepeta teucrifolia*, or *Viola cornuta*; and edged with *Arabis mollis variegata* or *Stachys lanata*.
- 6, 6, 6, 7, 7, 7.—We are loth to give up the scarlet *Pelargonium* here; but as Verbenas take less room and potting, etc., say Crimson King Verbena; banded with *Crysanthemum Sensation* kept pegged or pinched; and edged with *Viola cornuta* or *Nepeta teucrifolia*, according as either of these two plants is used for the bands in 4's and 5's.

As centre plants, the hardy *Yucca recurva pendula* can be used in No. 1; a Queen Holly in 2's and 3's; a Love-lies-bleeding in 4's and 5's; and in 6's and 7's a silver variegated Holly or golden Yew.

The whole of the plants used in this composition are such as are easily grown: some of them are perfectly hardy, and none of them are of delicate constitution. At the same time they are all effective plants for compositions of this description, and they are only the type of many others which are easily available.

Another very effective way of planting group No. 1, and still arranging on the principles of contrast, is as follows:—

Bed No. 1.—*Centaurea Ragusina*; edged with—where it does well—*Coleus Verschaffeltii*; *Iresine* or Beet are good substitutes for *Coleus*, where the climate is not favourable.

2, 2, 2.—Yellow *Calceolarea*; edged with purple *Verbena* or *Viola cornuta*.

3, 3, 3.—Purple *Verbena*, or purple Intermediate Stock; edged with golden-leaved *Pelargonium*; a light pink, such as *Christine*, also makes a very distinct edging to purple.

4, 4, 4.—Variegated (silver) *Pelargonium*, with cerise flowers, such as *Flower of Spring*; edged with blue *Lobelia*.

5, 5, 5.—Pink *Pelargonium*, such as *Christine*; edged with a bronzy crimson *Calceolarea*, such as *C. ambassador*.

6, 6, 6.—*Tropæolum Cooperii*, orange scarlet; edged with blue *Lobelia speciosa*.

7, 7, 7.—A dark crimson *Pelargonium*, such as *Waltham Seedling*, or *Stella*, or *Surrey Rival*; edged with variegated *Dactylis*.

This is a very effective way of planting such a design as this. The whole of the complementary beds, that is, those beds that are planted alike, are in 3's, and form triangles in the group. Banding and edging each bed, as suggested in the former way of planting it, can be followed up if desired,—so also can the relieving specimen plants; but in this case, of course, in 3's, or triangles, according as the beds are planted.

To plant on the principle of harmony, which has been recommended when to be studied and enjoyed close to the eye, the following are arrangements which are very pleasing and chaste:—

- Bed No. 1.*—Orange yellow *Calceolaria*; edged with *Trentham Rose Pelargonium*.
 2, 2, 2, 3, 3, 3.—*Centaurea Ragusina*; edged with golden *Pelargonium*. Pink also makes a very fine harmony with white or grey.
 4, 4, 4, 5, 5, 5.—*Pelargonium Christine*; edged with *Pelargonium Amy Hogg*.
 6, 6, 6, 7, 7, 7.—Scarlet *Pelargonium Tom Thumb*, or *Little David*; edged with golden *Pelargonium*.

If it be desired to plant on the principle of three colours in a bed, the plants recommended here for edging can be made into wider bands, and edging lines put round each bed. *Trentham Rose Pelargonium* band may have an edging of *Crimson King Verbena*; golden *Pelargonium*, of *Tropæolum Cooperii*, or, as an exceedingly quiet harmony, *Gazania splendens*, orange yellow; *Amy Hogg* band may be edged with *Pelargonium Stella* or *Waltham Seedling*; and the golden *Pelargonium* banding the outside beds may have an edging of *Cerastium*. Thus each concentric ring is in harmony, from the yellow in the centre, up through the white or grey to pink and scarlet, and the edgings are made to harmonize with the beds. This style produces an exceedingly soft combination of colours, and though not so startling at first, has beauty in it which, as it reveals itself to the attentive observation of the on-looker, heightens the more it is studied. To produce a more bold effect, but yet one that is much softened and subdued, as compared to that recommended for

distant effect, we would recommend the centres of each bed to contrast the one with the other, while the bands and edgings harmonised with whatever formed their own centres.

For instance, preserving the body of each bed as recommended in the first arrangement described for this group of beds, the band and edging could harmonize with its own centre thus:—

- Bed No. 1.*—Orange; banded with orange scarlet; edged with scarlet or red.
 2, 2, 2, 3, 3, 3.—Purple; banded red; and finished with dark crimson.
 4, 4, 4, 5, 5, 5.—Variegated Pelargonium; banded with pink; and finished with rosy purple, such as Amy Hogg Pelargonium.
 6, 6, 6, 7, 7, 7.—Scarlet; banded with orange; and finished with white or grey.

Another way of planting, which some might prefer, is:—

- Bed No. 1.*—Pink, edged with purple, if for contrast; for harmony, scarlet or white.
 2, 2, 2.—Pale yellow, edged with dark-foliaged plants, if for contrast; for harmony, Gazania.
 3, 3, 3.—Violet or purple, edged with silver-foliaged Pelargonium, for contrast; for harmony, with crimson Verbena.
 4, 4, 4.—Scarlet Geranium, edged with golden Pelargonium, for contrast; for harmony, with rosy purple Pelargonium.
 5, 5, 5.—Trentham Rose Pelargonium, edged with Perilla or Coleus, for contrast; for harmony, with crimson or pale pink.
 6, 6, 6.—Blue Lobelia, edged with Gazania splendens, for contrast; for harmony, with Lobelia Paxtonii.
 7, 7, 7.—Variegated Pelargonium, edged with dark-foliaged plant, such as Beet, for contrast; for harmony, with Cineraria maritima or Centaurea Ragusina.

Such arrangements as these are a compromise between the two principles; and while the centre of each bed has a boldness distinct from its fellows, the har-

monic lines with which it is surrounded take off the hardness, so that this is perhaps the finest principle of the three; for besides the mellow notes, we have the heavy bold bass tones as well.

It will at once be observed, that in planting this group, each corresponding bed, according as they are planted on the concentric or triangular system, is planted not only with the same colour, but with the same plants. It can easily, and somewhat justly, be objected that such a way of planting excludes variety; but to any one who values the beauties of geometric design, we say that this repetition of the same thing cannot be departed from, without violating the strictest and most fundamental principle of all geometric gardens. In the case of those who may only possess one such cluster of beds, and who have no other nook where a mixed style can be pursued, I would be the last to deny the charm of variety. But this group is supposed to form only part of a pleasure-garden; and in that case we would never recommend one bed to be planted with the charming *Centaurea Ragusina* and edged with *Coleus Verschaffeltii*, and its corresponding bed to be of dirty white *Verbena* edged with *Perilla*.

It will also be noticed that the softer tones are kept towards the centre of the group, and the strong bright ones to the extremity. We hold this to be a very important matter where a design has to be viewed as a whole. Starting in the centre with a fiery dazzle, in spite of all efforts of the eye and mind, that strong stroke of colouring will bulk too conspicuously in the eye. Bright yellow, as supplied by the *Calceolaria*, *Tagetes*, etc., is a dangerous colour to use much of, and should be sparingly employed. In all such compositions the

soft tones of the grey, golden, and chocolate or brown should be used, especially if many bright colours are introduced. Such plants as *Centaureas*, *Cineraria maritima*, silver variegated and golden variegated *Pelargoniums*, *Cerastium*, *Arabis*, gold and silver variegated, *Chrysanthemum Sensation*, variegated *Polemonium*, and *Dactylis*, give lively subduing touches, like the sky background of a painting; and these are plants which have the additional recommendation of being less susceptible of injury from winds and rains than tender petals. The graceful single specimen in the centre of each bed is not recommended for small beds; but in larger beds they form elegant relieving objects, and are more desirable, planted on the single centre system, than more numerous dotted over the bed in a design of this sort, where distinctness of expression is of first-rate importance.

The plants named in these arrangements are taken as types of the others which are enumerated and described in the selections we have made and treated of. To show these in various relationships to others, would occupy a volume unnecessarily. All that has been and shall be said generally of this group of beds, so far as it refers to the others also, will not be repeated when showing how they may be planted in square, oblong, and other more simple groups.

The outside or boundary circles in design No 1, which are represented as on grass embosomed in the bounding shrubbery, and separated from the geometric group by a broad walk, are intended to show how other interesting and beautiful phases of gardening can be introduced into one locality in a pleasure-garden, and which, though in themselves quite distinct, do not mar

their respective effects ; but instead of one phase violating the other, they heighten their individual beauty. It is not the fault of bedding plants nor bedding principles that other orders of plants have been excluded so much from our gardens ; but the evil lies more in the fact that gardens are too often designed so as to forbid the introduction of the one without clashing with the other, and that parterre-gardening is being carried out where it should never have been allowed a footing at all.

These outside circles—supposed to be embosomed in a surrounding shrubbery of such as *Rhododendrons* and other shrubs, the blooming season of which is mostly over by midsummer—may be most interesting in many ways ; and the style of gardening adopted in them ought, in our opinion, to be decided by the question as to whether such a design as this forms the whole or chief flower-garden ground contained in any given place, to say nothing of the time of year when most interest is required in a garden. To plant or adorn these boundary beds after the same manner as the centre group, would be very undesirable. Supposing the shelter and the locality to be quite equal to the hardiest style of subtropical gardening, we would, so far as our own taste goes, turn every other circle into a conical rockery, and plant it with such Alpines as are treated of elsewhere. The other circles we would plant with subtropical, or such plants as are now included in that designation. This would afford the strong contrast that exists between the gigantic beauty of the vegetation of Australasia and the cooler parts of India, and the no less beautiful, though more minute, vegetation of the Alpine regions of Europe. Such as these would certainly not detract from the interest attached to them

respectively, nor from their more brilliant rivals in the centre of the garden.

The Fern, the Palm, the Yucca, the *Dracæna*, the Ficus, etc., grouped in graceful combination in one bed, would be a noble relief on one hand to the Rock-trailer, the more tame foliage of the background, and the brilliant flowers in the centre groups of beds.

Or suppose the means at command do not admit of such tender plants, those whose taste runs in the direction of standard and dwarf roses, have here a most suitable locality for them; or if more classically inclined, these recesses can accommodate the statue and the vase alternately. The Hollyhock or the Dahlia would also have a suitable locality in such recesses; or a fine Conifer would not be an unseemly object, or any of the spiral forms of trees. Taste and circumstances would decide what feature to introduce in these places; but for beauty of vegetation, we would decidedly choose the Alpine and the fine foliaged plants, especially if the grounds afforded scope for the other things elsewhere. As permanent objects for effect all the year round, what could be more effective than such noble plants as *Yucca recurva pendula*, *Y. aloifolia variegata*, in such positions as these? And the latter, though the more tender of the two, will bear ten degrees of frost or more with impunity, with the slight protection of a hood of straw or mat.

But possibly, taking one season with the other, no more noble-looking object could be placed in such a position than the noble *Araucaria imbricata*, the *Cedrus deodara*, and some of the best of the other hardy Conifers. The objects that would be appropriate are so numerous, that it may safely be left to taste

whether it be the Conifer, the Standard or Pillar Rose, the Standard Rhododendron, or any of the forms of vegetation that have been named,—only let them be planted in systematic order and not as a medley, in such a design as this is a type of.

Speaking of vases which may be used for the embellishment of such a garden, alike as centre objects of all, round the margin of the centre group of beds, or in the centre of the boundary circle, it may be observed, that whatever plants are put in them, let them not be dumpy scarlet and yellow flowering plants,—a common shrub would be preferable. But there are plenty of more suitable and elegant plants to choose from. These are Aloes, Yuccas, Dracænas, Hardy Palms, etc., all of which are sufficiently beautiful in outline to mark them out as appropriate, where outline, not colour, in a garden of this description should be chosen for vases.

Design No. 2.

Bed No. 1.—White Intermediate Stock; banded with one of the dark-foliaged plants, such as Perilla, or Iresine Herbstii; edged with golden Pelargonium.

2, 2.—Pelargonium Trentham Rose, or Smith's Excellent; banded with Osborne's purple Verbena, and edged with Polemonium cæruleum variegatum.

3, 3, 4, 4.—Verbena venosa; banded with golden Pelargonium, or Chrysanthemum Sensation; edged with Crimson King Verbena.

5, 5.—Yellow Calceolaria; banded with Lobelia speciosa; edged with Tropæolum Cooperii.

6, 6, 7, 7.—Silver variegated Pelargonium; banded with Viola cornuta; edged with golden Arabis or Viola lutea.

8, 8.—Gazania splendens; banded with blue Lobelia speciosa; edged with Tropæolum Cooperii.

9, 9, 9, 9.—Scarlet Pelargonium; banded with Centaurea Ragusina; edged with Barret's or Dell's crimson Beet, or, where Coleus succeeds, it is preferable.

- 10, 10, 10, 10.—Pink Pelargonium, such as Christine ; banded with Pelargonium Waltham Seedling—very dark ; — edged with *Dactylis glomerata variegata*.
- 11, 11.—Crimson King Verbena, banded with golden Pelargonium or *Cerastium tomentosum*, or *Chrysanthemum Sensation*, kept dwarf ; if banded with Pelargonium or *Cerastium* edge with blue *Lobelia*, which for *C. Sensation* would be too low : for beds of this size, the *Cerastium* or Pelargonium would be more suitable.

This arrangement, as will be easily observed, is a contrasting one. The banding and edging are given as in the case of group No. 1 ; but for such small beds as some of these are—2, 3, 11, and 8, for example,—two colours will be more appropriate than three, because, unless the band be a broad one, and still not so broad as the centre, it does not produce the effect obtainable in larger beds. By dropping the edgings, the group will remain complete.

Of course, instead of the plants named, others of similar colours and heights can be used where this is more convenient. The white stocks can be very efficiently replaced by *Centaurea Ragusina*, white *Verbena*, or even *Cerastium* or *Koniga*. Trentham Rose Pelargonium, though it can be replaced with Rose *Verbenas* and *Saponaria Calabrica* is unapproached as an effective rose-coloured bed. *Violas* can be put in instead of the golden, and *Dactylis* in place of the silver variegated, Pelargoniums, although not desirable to do so. *Tagetes* makes a good substitute for *Calceolaria*, and the purple stock for *Verbena venosa* in soils where the latter does not succeed.

The groups may be planted as follows, still arranged to contrast :—

- 1.—Variegated Pelargonium, Flower of Spring, or Alma, or Bijou ; edged with crimson King Verbena. If Alma or Bijou be the

Pelargonium, the flowers should be pricked off; *Dactylis* would do when variegated Pelargoniums could not be had.

- 2, 2.—Pelargonium Christine; edged with *Viola cornuta* or purple Verbena.
- 3, 3, 4, 4.—*Lobelia speciosa*; edged with *Gazania splendens*, or golden Arabis, or golden Pelargonium.
- 5, 5.—Amy Hogg Pelargonium; edged with *Koniga variegata* or *Cineraria maritima*.
- 6, 6, 7, 7.—Pale yellow *Calceolaria canariensis*; edged with *Lobelia speciosa*.
- 8, 8.—Verbena venosa, purple Stock, or purple King Verbena; edged with *Chrysanthemum Sensation* or golden Pelargonium.
- 9, 9, 9, 9.—Scarlet Pelargonium; edged with *Cerastium tomentosum*, if the Pelargonium be Tom Thumb, Little David, or any dwarf scarlet. If such as Vivid be used, then *Polemonium caeruleum variegatum* or *Koniga* should be used instead of *Cerastium*.
- 11, 11.—*Centaurea Ragusina*; edged with *Perilla*, *Coleus*, or *Iresine Herbstii*.

To edge these beds with harmonizing colours, the edgings may be as follows:—

- 1.—White Stock; edged with pink or pale yellow.
- 2, 2.—Trentham Rose Pelargonium; edged with Pelargonium Amy Hogg.
- 3, 3, 4, 4.—Verbena, purple or violet; edged with Crimson King Verbena or Pelargonium Stella.
- 5, 5.—Yellow *Calceolaria*; if of the orange shade, edged with *Tropæolum Cooperii*.
- 6, 6, 7, 7.—Silver variegated Pelargonium; edged with golden Pelargonium or *Cerastium tomentosum*.
- 9, 9, 9, 9.—Dwarf scarlet Pelargonium; edged with *Gazania splendens* or Golden Chain Pelargonium.
- 10, 10, 10, 10.—Pink Pelargonium; edged with rose Verbena, such as Blondin.
- 11, 11, 11, 11.—Crimson King Verbena; edged with blue or purple, such as *Viola cornuta* or Purple King Verbena.

When the beds are to be planted on the harmonizing system, of course the same relationship of colour must

be observed as in the case of an edging with the body of the bed. Blues and yellows and oranges must not be placed side by side. Purples and whites must be kept apart, by harmonizing colours, and so forth.

Design No. 3.

This is rather an extensive group, or rather a series of groups, of beds, in the form of a parallelogram. Those who can afford space for such an extensive piece of garden, are presumed to know pretty well how to deal with all descriptions of designs; and, consequently, it may perhaps be only necessary to show how to plant it in one or two ways. So large a group calls more especially for distinctness in planting it, if it is to be effective and striking as a whole.

- 1.—*Centaurea Ragusina*; edged with *Coleus Verschaffeltii*, or *Iresine Herbstii*.
- 2, 2, 2, 2.—Pale yellow *Calceolarea*; edged with blue *Lobelia*.
- 3, 3.—*Lobelia speciosa*, or *Viola cornuta*; edged with *Gazania splendens*.
- 4, 4, 4, 4.—*Stella*, or other dark crimson *Pelargonium*; edged with *Dactylis glomerata*, or *Cineraria maritima*.
- 5, 5, 5, 5.—Pink *Pelargonium Christine*; edged with *Viola cornuta*, or Purple King *Verbena*.
- 6, 6, 6, 6.—Tom Thumb, or any scarlet *Pelargonium*; edged with *Cerastium tomentosum*, or *Koniga variegata*.
- 7, 7, 7, 7.—Purple Intermediate Stocks; edged with *Chrysanthemum Sensation*, or any creamy variegated *Pelargonium*, such as *Crystal Palace Gem*.
- 8, 8, 8, 8.—Silver variegated *Pelargonium*, such as *Flower of Spring*; edged with dark crimson foliaged plant, such as have frequently been named already.
- 9, 9, 9, 13, 13, 13, 13.—*Verbena venosa*; edged with White Intermediate Stocks, or any white.
- 10, 10, 10, 10.—Scarlet *Pelargonium*; edged with *Centaurea Ragusina*.

- 11, 11.—Pink Geranium ; edged with Coleus or Iresine, or crimson Calceolaria Ambassador.
- 12, 12, 12, 12.—Orange Calceolarea ; edged with purple King Verbena : or, it may be, Gazania ; edged with blue Lobelia, or Lobelia Paxtonii.
- 14, 14, 14, 14.—Mangles' Variegated or Shottisham Pet Pelargonium ; edged with Viola cornuta.
- 15, 15, 15, 15.—Crimson King Verbena ; edged with Chrysanthemum Sensation, or Dactylis, or Polemonium caeruleum variegatum.
- 16, 16, 16, 16.—Bijou or Alma silver variegated Pelargonium ; edged with Perilla or crimson Beet.

Another way of planting Design No. 3.

- 1.—Divide into four segments, two larger segments on each side towards beds 2, 2, 2, 2, the two smaller towards beds 3, 3. Let the dividing lines be of Centaurea Ragusina, and plant those opposite to beds 2 with a dwarf crimson Pelargonium, or Verbena Crimson King ; and the segments opposite beds 3 with pink Christine Pelargonium ; the edging to the crimson to be gold ; that to the pink to be purple or blue.
- 2, 2, 2, 2.—Variegated Pelargonium, such as Flower of Spring or Mangles' ; edged with Iresine Herbstii, where it does well.
- 3, 3.—Verbena venosa ; edged with Golden Chain or Cloth of Gold Pelargonium.
- 4, 4, 4, 4.—Scarlet Pelargonium ; edged with a bronze Zonale Pelargonium, such as Luna or Mrs. Pollock among tricolors.
- 5, 5, 5, 5.—Coleus Verschaffeltii ; edged with Centaurea Ragusina ; or, where such plants do not succeed, put Perilla or Iresine in place of Coleus.
- 6, 6, 6, 6.—Pink Pelargonium ; edged with Viola cornuta.
- 7, 7, 7, 7.—White Stock, or Centaurea, or white Verbena ; edged with blue Lobelia.
- 8, 8, 8, 8.—Crimson King Verbena ; edged with Chrysanthemum Sensation, or Polemonium caeruleum variegatum.
- 9, 9, 9, 9, 13, 13, 13, 13.—Cloth of Gold, Golden Chain, or any of the fine golden Pelargoniums ; edged with Iresine Herbstii.
- 10, 10, 10, 10.—Trentham Rose Pelargonium ; edged with purple Stock, or any dark striking colours.
- 11, 11.—Centaurea Ragusina ; edged with Coleus Verschaffeltii : or white Stock ; edged with crimson Beet, or Amaranthus melancholicus ruber.

- 12, 12, 12, 12.—Blue Lobelia ; edged with *Gazania splendens*.
 14, 14, 14, 14.—*Stella Pelargonium* ; edged with *Chrysanthemum*
Sensation or *Dactylis glomerata variegata*.
 15, 15, 15, 15.—Purple Stock, or purple *Verbena* ; edged with dwarf
 yellow *Calceolaria*, or *Tagetes signata pumila*.
 16, 16, 16, 16.—Scarlet *Pelargonium*, or scarlet *Tropæolum* ; edged
 with *Lobelia speciosa*, or *Viola cornuta*.

If it be desired to put a band round these beds, and then an edging, it can easily be seen, from the former directions on this point, how to do it. In a large group, especially if a long one, it is not desirable to have too many colours in one bed, else it is more apt to breed confusion when the design comes to be studied ; and boldness, when it has to be viewed from a distance, is here of more importance than in a small design.

VILLA GARDEN GROUP OF BEDS.

Design No. 4.

This is supposed to represent the front of a small villa residence, the occupier of which has a vinery or greenhouse, or both, in which he can grow as many plants suited for summer flower-gardening as will fill the beds represented on the circle of grass. Or it may be the residence of one who, not having any glass-house, can and is disposed to purchase the necessary number of plants. The entrance is supposed to be close to a public road, and not more than sufficient for foot-passengers. The whole space is bounded by a wall, which is planted out or hidden by a strip of shrubs planted on the natural system of mixing evergreen, variegated, berry-bearing, and flowering deciduous shrubs, for the sake of both variety and elegance. The enclosed space on which are represented a few beds, might be cut up into many

shapes ; but it is presumed that, by throwing the whole available ground into one open simple-shaped space, there is gained more room, light, and air for plants, while there is an air of extent and repose which the frittering up of such spaces of ground effectually destroys. The edging on the shrubbery side of the walk in such a place as this I would recommend to be of some of the fine Ivies, which will be found enumerated and described elsewhere. They are always beautiful, fresh, and glossy, not particular as to soil, and give much less trouble than either a box or grass verge.

The group of beds is on grass, and may be considered sufficient of this order of flower-gardening for a place of this extent. But should more beds be fancied, they can be introduced without any violation of the design, by shortening a little each of the four outside beds, and putting a small circle between each. But I recommend the simplicity of the group as represented.

The shrubbery is supposed to become narrower round the ends of the house, and to afford space for a mixed border of hardy perennial plants, etc. ; or, where taste leads in the direction of Ferns or rock plants instead, there may be a Rockery at one end, and a shady recess for Ferns at the other. Roses may be planted in conjunction with dwarf flowering shrubs, immediately behind the Ivy edging already referred to, so that there is no reason why the five simple beds in front of the residence should prevent the enjoyment of hardy flowering plants as well. Then, again, where fancy and taste lead in the direction of fine climbing plants, the shrubbery may be of dwarfer-growing plants exclusively, and the wall, in part, devoted to evergreen plants suitable for covering walls.

The planting of the beds may be as follows:—

- Bed No. 1.*—Silver variegated Pelargonium ; banded with *Gazania splendens* ; edged with blue *Lobelia*. If the Pelargonium be Flower of Spring or Mangles' Variegated, with their soft blooms and silver-edged leaves, the *Gazania* will be in harmony with it, and the blue *Lobelia* will give a dark banding line, to as it were gather in the eye and mind to the central softness and beauty of the bed.
- 2, 2.—Some purple shade, such as *Verbena Purple King*, *V. venosa*, *Viola cornuta*, where soil and climate suited it, or purple Stock, or Pelargonium Amy Hogg, or any of the purplish shades of Pelargonium ; edged with pink, such as Pelargonium Christine, Mrs. Whitty : Purple King *Verbena*, or Amy Hogg Pelargonium, would do well with the pink Pelargonium.
- 3, 3.—Brilliant scarlet, such as Pelargonium Tom Thumb, P. Sutton's Perfection, or Little David—the three best plain-leaved ones for amateurs ;—edged with Golden Chain Pelargonium, or one of the dwarf yellow *Tropæolums*, such as *T. luteum superbum*.

Another way of planting :—

- Divide the circle 1 into four segments by running a line of *Perilla Nankinensis* across it, and then another line of the same across at right angles. Each of these four segments looks in the direction of one of the outside beds. Plant both segments looking towards 2, 2 alike with pink Pelargonium Christine, and the other two with orange yellow *Calceolaria*. Edge the orange yellow with *Viola cornuta*, and the pink with *Crimson King Verbena*. This makes a striking and varied bed.
- 2, 2.—Opposite the pink, plant with *Crimson Pelargonium Stella*, and edge it with *Verbena Blondin* or *Saponaria Calabrica* ; or *Dactylis glomerata variegata* will do very well.
- 3, 3.—Opposite the orange yellow in the centre bed, plant with a silver-edged scarlet-flowered Pelargonium, such as *Bijou* or *Queen of Queens*. But if these are not easily obtained, *Koniga variegata*, slightly mixed with scarlet *Verbena*, will do very well ; edged with blue *Lobelia* or *Viola cornuta*.

To plant them effectively with much less costly plants :—

- 1.—Blue *Lobelia* mixed with *Gazania* ; edged with *Cerastium tomentosum*.
- 2, 2.—*Saponaria Calabrica* ; edged with *Viola cornuta*.
- 3, 3.—Crimson King *Verbena* ; edged with *Chrysanthemum Sensation*.

Our own taste would lead us to plant a graceful but not too spreading shrub in the centre bed 1, such as a golden Queen, or silver Holly, or a *Cupressus Lawsoniana* with its green glaucous leaves ; a golden Yew in 2, 2 ; and in 3, 3 an upright-growing Juniper, or even a common Irish Yew or Chinese *Arboretæ*. The centre plant should not be over 6 feet high, and the outside ones 4½ feet. These would not interfere with the display of flowering plants, and would afford some relief to the flatness of the space. If a *Dracæna Australis* could be procured for bed No. 1, a *Yucca aloifolia variegata* for beds 2, 2, and a *Yucca recurva pendula* for 3, 3, it would be the very perfection of elegance. The last named is quite hardy ; the *Y. aloifolia variegata* is nearly so ; and the same may be said of *Dracæna Australis*. Then there is the *Chamærops Fortunei*,—a hardy and beautiful Chinese Palm. Such plants introduced here would give a variety to such small grounds, and contrast well with the surrounding vegetation.

Design No. 5.

The only difference between this and No. 4 is the difference of a square central space, with circular beds exclusively. I am exceedingly partial to the circle for grouping flowering plants. The symmetry is such that, viewed from whatever side, the outline is beautifully perfect. The principal object in

introducing another design of such a small group of beds as this, and of making them circular, is to suggest to those who may be fond of elevated cones of flowering plants, that the circles especially afford an opportunity for varying the planting, year by year, from an ordinary-shaped bed to that of a cone of flowers. If this group could be planted with the centre cone 4 to 5 feet high, having the hardy *Yucca recurva pendula* for its apex, and the slope of the bed planted with *Perilla* and silver variegated *Pelargoniums* time about,—*Centaurea Ragusina* or *Cineraria maritima* would be better than the *Pelargonium*, but they are not easily got sometimes,—it would represent a living rock-work of dark chocolate and silver, edged with crimson *Verbenas* and *Pelargoniums*.

- 2, 2. Cone of scarlet *Pelargonium* Tom Thumb, with a specimen *Fuchsia* about 2 feet high in its centre; edged with *Koniga variegata* or *Cerastium tomentosum*.
- 3, 3. Cone of pink *Pelargonium*, with centre specimen of *Love-lies-bleeding*; edged with purple *Verbena* or *Viola cornuta*.

Some may suppose that these cones will suffer much for want of moisture in dry weather; but they do not, from the fact that the roots go deep down into the depth of soil provided for them; and a basin can be formed round the centre specimen by putting a ring of stones round it, into which a potful or two of water can be poured during long droughts. If those who are situated in wet districts were to elevate their flower beds well, and use poor light soil, there would be fewer complaints of *Pelargoniums* being so scant of bloom. By doing this, and using old plants, the tendency to bloom would be much increased. It is easy turning such beds as these circles into cones by raising them

with earth, and again making ordinary beds of them by removing it. The planting of this group can be seen from design No. 4, the relationship of the beds to each other being the same in both.

Design No. 6.

This beautiful form of scroll border is to be met with frequently in large gardens, and it may be considered so unique in its lines as to be incapable of much improvement. All the polychromatic attempts that I have seen, to my taste, are either stiff or paltry, or both, as compared to this, which is of very ancient origin. It can be laid down in either box or gravel, but it is, to all intents and purposes, best in a neutral gravel, with box edgings, for the effective display of colour. The limited breadth of the beds and borders does not admit of putting more than one colour in each, except in the straight line of the outside boundary border. When laid down to a great length, the colours, to be effective and distinct from one end to the other, should be contrasting. But one of the great recommendations of this pattern is, that a short length of it can be laid down and look pretty almost anywhere. For a terrace garden design it is very well adapted.

There is probably not a more effective manner of planting it than by selecting the three primary and contrasting colours, and placing yellow or orange in the centre, No. 1: *Calceolaria canariensis* is the best I know for the purpose, it being dwarf, and a continuous bloomer. *Lobelia speciosa* cannot be excelled as a blue for the scrolls, No. 2; and where the soil is holding and rich, for the boundary borders, No. 3, *Verbena* Lady Victoria Scott, or *V. Miss Trotter*, or any dwarf, compact

free-blooming scarlet *Verbena*. On hot porous soils I would lower these borders, 3, a little, and bring Little David *Pelargonium* down to the proper level, and the effect would be finer even than with the *Verbena*. Especially if the gravel be dark, I would put a thin streak of *Cerastium tomentosum* all along the outside of 3; or if the soil were strong and suitable, *Arabis lucida variegata* would answer admirably, and require less keeping than *Cerastium*, for it is naturally compact in growth.

A more subdued, but less beautiful, effect is produced by putting *Cerastium tomentosum* instead of the scarlet.

A most chaste and soft colouring would be to put a large specimen of *Centaurea Ragusina* in the centres of 1, and fringe it with *Cerastium*, if the *Centaurea* would not quite fill up the circle; 2. blue *Lobelia*; 3. Golden Chain or Cloth of Gold *Pelargonium*, allowed to flower.

Another very effective way is to put in 1, *Centaurea*; and the scrolls, 2, Golden Chain, or any bright golden *Pelargoniums*, and blue *Lobelia* in the alternate scrolls; and plant 3 with scarlet.

To plant it effectively with much less costly plants, put *Tagetes signata pumila* in the circle 1; *Viola lutea*, or the yellow Pansy, would do in heavy rich soil. *Tagetes* is well adapted for hungry dry soils. *Viola cornuta*, admitting that *Lobelia* is not attainable, in 2; and if *Verbenas* cannot be obtained, *Saponaria Calabrica* in 3. These are all compact-growing effective plants, but of course fall far short of the brilliancy of the previously named things.

PLANTING LONG BORDERS.

Design 7—No. 1.

This represents a long stretch of border, without being broken up into any design with walks and edgings of any description. A broad gravel-walk runs along the front of it, and its back boundary may be different, according to circumstances. In some instances it may be a shrubbery; in others, a row of espalier trees separating the vegetable from the ornamental ground, which is frequently laid out along the front of a range of hothouses.

A border of this description affords great scope for effective planting, and many designs might be worked out over its surface with flowers; but here, as in every other instance where there is to be beauty and repose, I advise simplicity of design.

The following is a very effective way of planting such a border:—

- Back line, 1.—*Humea elegans*, 4 feet apart, with a dwarf white *Dahlia* mingling its blooms with the bronzy spray of the *Humea*.
2. A line of *Dahlia Zelinda*; purple.
 3. A line of large plants of *Pelargonium Christine*, or any other good pink variety.
 4. A ground-work of *Stella Pelargonium*.
 5. Raised panels of specimen plants of *Centaurea Ragusina*, from 2 to 3 feet in diameter, the plants appearing to rest on the crimson surface.
 6. Line of *Christine Pelargonium*.
 7. Line of purple *Verbena*.
 8. Line of dwarf yellow *Calceolaria canariensis*.
 9. Ground-work of blue *Lobelia speciosa*.
 10. Single specimens of *Polemonium cæruleum variegatum*.
 11. Line of *Arabis lucida variegata*.

This is a description of planting which has claimed

my attention to a very considerable extent, having a series of borders to decorate which are especially adapted for it. Perhaps it might be suggested that the panel specimens of the *Centaurea* and *Polemonium* should be a series of connected links, as it were, strung together in the ground-works by a connecting line. But the most careful observation has convinced me that chainwork running through such a border would take away that simplicity which exists in seeing the panels, as it were, set down upon the ground-work, without any line to prevent the eye from seeing fully into the colour of the ground-work and round each panel plant.

Another way of planting on the same principle:—

1. A line of white *Dahlia alba floribunda*.
2. A line of crimson *Dahlia Prince Arthur*.
3. A line of large plants of silver variegated *Pelargonium Flower of Spring*.
4. Ground-work of *Verbena venosa* or *Purple King*; the former preferable where it succeeds.
5. Single specimens of *Yucca aloifolia variegata*, rising 2 feet above the ground-work.
6. Line of *Pelargonium Flower of Spring*.
7. Line of a purplish *Pelargonium*, such as *Amy Hogg*.
8. Line of *Pelargonium Christine*.
9. Ground-work of *Crimson King Verbena*.
10. Single specimens of *Chrysanthemum Sensation*, rising about a foot above the *Verbena*.
11. Line of *Mrs. Pollock Pelargonium* and *Lobelia speciosa* alternately; or, to give a peculiarly soft margin line, substitute *Cerastium* for the *Lobelia*.

It will be observed that all the back lines stretch to the extremity of the borders, while all the front ones are turned in upon the ends, as also are the front ground-work and panel plants. This gives a finished and less abrupt-like termination to the border. This style

of planting may be termed a combination of the ribbon and panel systems, each of which is in itself effective in different places; but where a border of this width of surface has to be dealt with, the one gives distinctness and variety to the other, and is very effective.

Design 7—No. 2.

This is a much narrower border, and is dealt with in a somewhat different manner, but still preserving the two systems of planting combined.

1. Back line of *Tritoma uvaria*, with crimson or purple *Dahlia* alternately.
2. Silver variegated *Pelargonium*, or *Cineraria maritima*.
3. Ground-work of Little David or Tom Thumb *Pelargonium*.
4. Single specimens of either variegated *Yuccas* or *Centaurea*, zoned off from the scarlet with purple *Verbena*.
5. Line of silver variegated *Pelargonium*, or *Cineraria maritima*.
6. Line of purple King *Verbena*.
7. Line of *Polemonium cæruleum variegatum* planted a little wide, and a plant of *Cerastium tomentosum* in between; chaste in the extreme.
8. Line of *Lobelia speciosa*.

Another way:—

1. *Tritoma uvaria*, mixed with crimson *Dahlia* Prince Arthur.
2. Line of silver Bijou *Pelargonium*, with the blooms picked off.
3. Ground-work of *Verbena venosa*, or V. Purple King.
4. Panels of yellow *Calceolaria* and scarlet *Pelargonium Vivid*, alternately.
5. Line of smaller plants of silver variegated *Pelargonium*.
- 6 and 7. Line of Little David scarlet *Pelargonium*.
8. Line of *Cerastium tomentosum*, or any of the golden *Pelargoniums*, such as Cloth of Gold, or Golden Chain, or the Mrs. Pollock type.

Another way of planting such a border:—

Three back lines next the *Tritoma* of *Pelargonium Stella*; then a line of golden or silver variegated *Pelargonium*; then a ground-work of *Lobelia speciosa* and *Gazania splendens* mixed, with

panels of single specimens of *Centaurea*, and, where it succeeds, *Coleus Verschaffeltii* alternately; or the *Centaurea*, repeated consecutively, is fine. This makes a charming border.

In some cases I have seen a fine effect produced by planting a compact spiral shrub along the centre of such border panel plants; the back half of the border planted with scarlet *Pelargonium*, and in front of the scarlet, a row of white or grey running along and spanning the base of the shrub with a circle; then the front part of the border planted with such as blue *Lobelia*, with panels in it of *Centaurea* or *Polemonium*, alternating in line with the shrubs,—the front line being *Gazania*, or golden or tricolor *Pelargonium*.

Design 7—No. 3.

This is a border supposed to be surrounded on each side with gravel or grass, and planted on the panel system.

1. A line of *Lobelia speciosa* or *Viola cornuta*.
2. A line of golden or silver variegated *Pelargonium*.
3. Ground-work of Crimson King *Verbena*.
4. Single specimens of *Yucca aloifolia variegata*, zoned off from the ground-work with purple *Verbena* or purplish *Pelargonium*.
- 5 and 6 the same as 1 or 2; round panels of *Chrysanthemum*
Sensation would do very well in place of the *Yuccas*.

Such a border as this affords scope for a great variety of planting, and the panels give an opportunity of employing such graceful plants as *Yuccas*, *Ferns*, *Dracænas*, and *Palms*. By using *Yucca recurva pendula* and *Dracæna draco*, and some of these drooping-leaved plants, we have the nearest imitation of a series of central fountains surrounded with flowers; or dwarf vases alternating with other garden ornaments, can be introduced

with fine effect. By using such plants in this way, the glare of colour is subdued and variety of outline created, which is very desirable.

Let any one who has seen *Centaurea Ragusina* and *Coleus Verschaffeltii* in combination, suppose a ground-work of the former with panels of the latter in a border 80 or 100 yards long. Even *Perilla* produces a fine effect with the *Centaurea*.

When a soft effect is wanted, the ground-work may be composed of such plants as Mangles' variegated *Pelargonium*, *Koniga variegata*, or even *Cerastium*. The ground-work may be of blue, such as *Lobelia*, or, softer still, *Viola cornuta*, with *Centaurea* panels; and *Cerastium*, Golden *Arabis*, or Golden Chain *Pelargoniums*, for edging lines to the blue, when the panels are white or grey.

Then, again, the ground-works can be very often laid down in mixtures, such as variegated *Pelargonium*, mixed with purple *Verbena*, *Viola cornuta*, or *Lobelia speciosa*; or *Lobelia* mixed with *Gazania*; or *Lobelia* and *Cerastium*, plant for plant. In this case the boundary lines should be all of one plant; or, when the ground-works are selfs, the boundary lines, especially the back and front lines of all, can be two distinct plants, time about.

There are many plants which can be used as back lines to such borders when they are one-sided, besides *Tritomas*, *Humeas*, and *Dahlias*: there are *Hollyhocks* and *Gladioli*, and *Cannas*, *Ricinus*, and other sub-tropical plants, when there is sufficient shelter for such easily injured subjects. Then there are the hardy variegated shrubs, besides such plants as *Arundo conspicua*, *A. donax*, *A. donax variegata*, the New Zealand *Flax*,

etc. etc.; or, where the position is suitable, back lines of Roses would come in well.

Wavy or curved lines can be introduced into such borders by those who have a taste for them; but in long borders, when viewed from the ends, wavy lines are apt to breed confusion.

Ribbon Border Planting.—This consists of planting long borders with a series of various colours in uninterrupted straight lines, which I do not consider so effective as panel planting, though amateurs and others of small resources can carry it out more easily than panel planting. The variety of ways in which a border can be ribboned is almost as various as are Coventry ribbon patterns. But a few examples will suffice to illustrate the system:—

No. 1. To give a very soft combination, to be viewed close at hand.

1. *Cerastium tomentosum*, grey.
2. *Lobelia Paxtonii*, light blue; (general effect).
3. *Lobelia speciosa*, blue.
4. Golden Chain *Pelargonium*, gold.
5. Flower of Spring *Pelargonium*, silver variegated, light rose flowers.
6. Trentham Rose *Pelargonium*, rose.
7. Amy Hogg or similar *Pelargonium*, purplish rose.
8. Scarlet or crimson *Pelargonium*, such as Vivid, Sutton's Perfection, or Stella.

No. 2. A more distinct or contrasting combination, for distant effect.

1. *Cerastium tomentosum*, grey.
2. *Lobelia speciosa*, blue.
3. Yellow *Calceolaria* or golden *Pelargonium*.
4. *Verbena Purple King*, purple or plum.
5. *Pelargonium*, such as Bijou or Alma, silvery.
6. *Pelargonium Stella*, crimson.

No. 3. A very superior combination, where the whole of the plants are likely to do well, and where means are ample.

1. Lobelia speciosa or Viola cornuta.
2. Golden Chain, or any golden Pelargonium.
3. Iresine Herbstii, crimson.
4. Centaurea Ragusina, grey.
5. Coleus Verschaffeltii, brownish crimson.
6. Large plants of Pelargonium Christine, light pink.
7. Scarlet Pelargonium Vivid.
8. Back line of dwarf white Dahlias.

No. 4. For Narrow Borders with easily managed Plants.

1. Blue Lobelia or Viola cornuta, blue or mauve.
2. Koniga variegata or Cerastium, grey.
3. Tom Thumb Pelargonium, scarlet.
4. Purple Stock or Verbena.
5. Tagetes signata pumila.

No. 5. Exclusively with Plants that can be raised with common Garden Handglasses.

1. Viola lutea, or common yellow Pansy, or golden Arabis.
2. Viola cornuta, purple or mauve.
3. White Intermediate Stock, white.
4. Purple Intermediate Stock, purple.
5. Tagetes signata pumila, orange.
6. Crimson Beet (Barret's), or scarlet Stock.

No. 6. A similar Border to the preceding.

1. Cerastium tomentosum, grey.
2. Viola cornuta, purple or mauve.
3. Saponaria Calabrica, red.
4. White Stock.
5. Scarlet Stock.
6. Tagetes signata pumila, orange.
7. Purple Stock.

No. 7. Composed of Annuals that can be sown in the open Border.

1. Nemophila insignis.
2. Virginian Stock, red.

3. Sweet Alyssum, or white Saponaria.
4. Crimson or purple Candytuft.
5. Eschscholtzia Californica, yellow.
6. Prince's Feather.

By a reference to the list of Annuals at page 147, amateurs can easily see the various colours and heights of Annuals to succeed each other in ribbon borders.

Long borders of this description should have a slope rising to the back before being planted, and any line of plants can be lowered very simply to a desired level, by throwing out a little of the soil on to the other part of the border.

Examples of Planting Beds.

1. A large bed, supposed to be the key or centre bed of a group of large beds, or as an isolated bed. Centre of some strong-growing silver variegated Pelargoniums, such as Bijou. This should be planted so as to leave 5 feet of a space all round the bed. Edge close to the Pelargoniums with Golden Chain and Cloth of Gold Pelargoniums, and then plant 4 rows of Lobelia speciosa, and edge it next the box with Gazania splendens, and place single plants of Centaurea Ragusina in the centre of the blue band, and about 8 feet apart. This makes a magnificent though quiet bed. It does very well, and is fully more brilliant, to mix the blue with Gazania, and edge next the box with Little David Pelargonium. The ground requires to be lowered a little for P. Little David.
2. Centre dwarf or yellow Dahlia, then two rows of purple Zelinda Dahlia, finishing the bed with either Cineraria maritima or Centaurea, putting the outside line a little thinner, and planting between each plant with Purple King Verbena. This makes a noble-looking bed.
3. Calceolaria aurantia multiflora, with two rows of either Perilla, Coleus Verschafeltii, or Barret's Beet, round it; then two lines of white or grey foliage, such as Dactylis glomerata, finished with a line of Viola cornuta.
4. Prince Arthur Dahlia, with two rows of pink Christine Pelargonium, finished with white or gold, such as Golden Chain Pelargonium, or Koniga variegata.
5. Pelargonium Stella, with two rows of Chrysanthemum Sensation,

- finished with blue or lavender, such as *Ageratum Mexicanum*, pegged down.
6. *Pelargonium Christine*, with two rows of *Calceolaria canariensis*, finished with a line of *Iresine Herbstii* or *Lobelia speciosa*. I confess I do not like pink and yellow put together, but this makes a not unpleasant and rather singular bed.
 7. *Trentham Rose Pelargonium*, two rows of *Crimson King Verbena*, finished with *Mrs. Pollock*, or any of the free-growing *Pelargoniums* of this type. This makes a splendid bed.
 8. *Chrysanthemum Sensation*, with two rows of *Crimson King Verbena*, finished with *Cerastium tomentosum*. Very fine.
 9. *Pelargonium Stella*, with two rows of *P. Christine*, finished with *Viola cornuta*.
 10. *Pelargonium Stella*, two rows of yellow *Calceolaria*, finished with purple *Verbena*.
 11. *Verbena venosa*, or *Purple King*, two rows of *Pelargonium Flower of Spring*, finished with *Iresine Herbstii*.
 12. *White Stock*, two rows of *Pelargonium Amy Hogg*, edged with *P. Mrs. Pollock*.
 13. *Scarlet Pelargonium*, two rows of *Ageratum Mexicanum*, finished with *Koniga variegata*, or dwarf variegated *Pelargonium*, such as *Mangles*.
 14. *Scarlet Pelargonium*, two rows of *P. Christine*, finished with golden *Pelargonium*.
 15. *Pelargonium Waltham Seedling*, edged with *Shottesham Pet*, finished with blue *Lobelia*.
 16. *Coleus Verschafeltii*, two rows of *Centaurea Ragusina*, finished with *Mrs. Pollock* or *Luna Pelargonium*.
 17. *Centaurea*, two rows of *Amaranthus melancholicus ruber*, or *Iresine*, *Perilla*, or *Coleus*, according as localities are suitable, finished with *Cloth of Gold Pelargonium*.
 18. *Perilla*, with two rows of *Cineraria maritima*, finished with *Mrs. Pollock Pelargonium*.
 19. *Tagetes signata pumila*, with two rows of *Beet*, finished with *Dactylis glomerata variegata*; a grand bed, and only requires a frame to raise the *Tagetes*.
 20. *Chrysanthemum Sensation*, with two rows of *Coleus*, *Amaranthus melancholicus ruber*, *Perilla*, or *Beet*, finished with *Golden Pelargonium*.

These are all suitable for large beds, which would have a heavy appearance, unless planted with three

colours. The examples given are chiefly on the principle of contrast. The planting may be varied with very good effect, by planting the finishing line the same as the centre of the bed; thus: Suppose a centre of the hardy Chrysanthemum Sensation, with two rows of crimson King Verbena, or dark-foliaged plant, then finish with Chrysanthemum Sensation, kept pinched and pegged to dwarf it.

Variety can also be obtained by mixing the edging line with another plant, to give, as it were, a mixed fringe; thus:—

A centre of Pelargonium Stella, banded with pink, and finished with P. Cloth of Gold and blue Lobelia, plant for plant. This mixed edging has a very cheerful effect.

Then, again, for variety in large beds, especially when isolated, a mixed centre looks exceedingly well; thus:—

1. Variegated Veronica, or a silver variegated Pelargonium, mixed with Verbena venosa, or V. Purple King, and edged with crimson, looks remarkably well.
2. Or variegated Pelargoniums, mixed with Viola cornuta, and edged with Iresine, or any strong colour; or golden Pelargonium mixed with Viola cornuta looks very beautiful.
3. White and purple Stocks planted time about, and banded with orange scarlet, such as Tropæolum Cooperii, is also fine.
4. Gazania splendens mixed with blue Lobelia, and edged with Cerastium or Little David Pelargonium, is very effective.

For planting smaller beds with two colours, the following are effective:—

1. Tropæolum Cooperii, edged with one row blue Lobelia.
2. Blue Lobelia, edged with Cerastium tomentosum.
3. Cerastium tomentosum, edged with blue Lobelia, is exceedingly sweet.
4. Pelargonium Little David, edged with P. Cloth of Gold, or any of the compact golden sorts.
5. Pelargonium Mrs. Pollock, edged with Cerastium or blue Lobelia.

6. *Viola cornuta*, edged with Golden Arabia, or *Cerastium*, or *Gazania splendens*.
7. *Gazania*, edged with blue *Lobelia*.
8. Variegated *Pelargonium Alma*, edged with *Iresine*.
9. Queen of Queens *Pelargonium* (variegated), edged with *Tropæolum Cooperii*.
10. *Tropæolum luteum*, edged with *Viola cornuta*.
11. Mrs. Pollock *Pelargonium*, edged with *Iresine*. The mixed system of centre and edging may be adopted in small beds occasionally, for the sake of variety, the same as shown for large beds. The plants named in these combinations are such as I conceive would be most familiar to the largest number of readers, and are the type of many others.

Shaded Beds.

A few illustrations of these will be given, to show how to plant on the harmonic system. It is supposed that the beds are not large, and that two lines of each plant named are sufficient to fill them up:—

1. White *Pelargonium*, or *Centaurea Ragusina*, or silver-leaved *Pelargonium*, with the blooms kept off.
2. *Pelargonium Christine*.
3. P. Trentham Rose.
4. P. Sutton's Perfection.
5. P. Stella.

This is a shaded bed of *Pelargoniums*, and can be planted with the white at the centre, which we think best, or *vice versa*.

1. *Calceolaria amplexicaulis* at centre.
2. *C. aurantia multiflora*.
3. C. Prince of Orange.
4. C. Ambassador, or Havelock.

A shaded bed of *Calceolaria*, with pale yellow at centre, increasing in depth of colour to the outside row, which is crimson.

Pincushion Beds.

This is a popular designation given to beds that are planted with a self-colour as a ground, and dotted over with contrasting plants ; and when well carried out, it makes a pleasing variety:—

A ground-work of blue Lobelia, edged with *Cerastium tomentosum*, and plants of Mrs. Pollock Pelargonium planted regularly in it at intervals, not too thick to hinder the ground-work to be distinctly seen all round each plant of the Pelargonium.

A ground-work of *Cerastium*, dotted with Little David Pelargonium ; the edging blue Lobelia.

A ground-work of Crimson King, dotted with large plants of *Chrysanthemum Sensation*.

A ground-work of *Tropæolum Cooperii*, dotted with *Tropæolum luteum*.

A ground-work of *Viola cornuta*, dotted with yellow *Calceolaria*, or *Centaurea Ragusina*.

These few illustrations will, we think, explain what is here treated of, and show how a great variety of beds of this sort could be planted.

For the method adopted so much by the French—and which has been long less or more practised in British gardening—of planting a bed thinly with fine-foliaged plants, and covering the ground between with a carpet of flowering plants, we refer to the passage on French flower-gardening, pages 130, 131.

Pyramidal Beds.

The system of planting towering pyramids, or cones of flowering plants, has already been briefly referred to. To preserve tall old Pelargoniums and other plants for this purpose requires a good deal of glass accommodation ; and where such can be afforded, these form a very effective variety in flower-garden grounds. And we have attained the same end by using ordinary plants planted

on raised mounds of soil; and immediately the planting is finished, paving the surface of the cone with round stones such as can be found in the beds of rivers and by the sea-shore. This plan keeps the soil from being washed down by heavy rains, and also keeps it moist in dry weather. Such raised beds are very effective in sunny nooks and recesses, where there is a back-ground of shrubs or trees not too close to them, as in the recessed circular beds in design No. 1. They may either be all one colour, or a mixture of plants, as circumstances require. In planting baskets and these mounds in ground where there are many ordinary self-beds, it makes a good variety to make them one mixed nosegay, as it were, though there is no question that, for distant effect, self-planting is the most striking.

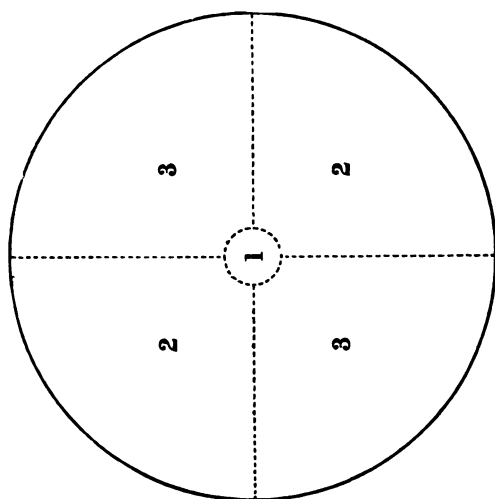
To give variety, and at the same time distinct and expressive effect in one bed, is of considerable importance to those who have only one bed that they can, or feel disposed to devote to the grouping system of planting. Fig. 2 is designed to show him this can be done with considerable variety. And it will be supposed that the planting has to be accomplished with plants which require nothing more than a garden hand-glass or two, and a spare window to grow and preserve them.

1. A round or oblong group (according as the shape of the bed may be) of scarlet Tom Thumb Geranium, or even one good plant of it. From this to each corner plant a line of *Dactylis glomerata variegata*.
- 2, 2. *Viola cornuta*; edged in front with *Cerastium tomentosum* or *Viola lutea*.
- 3, 3. *Saponaria Calabrica*; edged in front with *Arabis mollis* or *A. Alpina variegata*.

The centre—1—may be the hardy *Tritoma uvaria*; the intersecting lines may be Prince's Feather, and

the segments 2, 2, *Dactylis glomerata variegata*, with *Gladiolus Brenchleyensis* mixed thinly in it ; 3, 3, purple

Fig. 2.



Stock or scarlet *Pelargonium*, with some light-coloured *Gladiolus* mixed in ; the edging to 2, 2 *Viola cornuta*, and to 3, 3 *Cerastium* or *Viola lutea*. This would make a very picturesque bed, and give a good deal of variety, making, as it were, four beds out of one. Some, however, may prefer the circular system of planting to the sectional—plenty of examples are given of the circular system, and they need not be repeated here,—or a group of *Gladiolus* may be planted in the centre : the intersecting lines may be *Tagetes signata pumila* ; 2, 2 filled with purple Stocks ; 3, 3 with scarlet Stocks. Or if the bed be large, the intersecting lines may be of *Gladiolus* ; and if a sufficient number of *Pelargoniums* can be mus-

tered, plant 2, 2 with scarlet Pelargoniums, and 3, 3 with Tagetes or purple Stock—the edging to the scarlet being of Arabis or Cerastium, and to the Tagetes of Viola cornuta. Many annuals, such as Candytufts, purple, crimson, and white, the blue Nemophila, Virginian Stocks, and many others included in the lists given, may be used in such a bed with a very pretty effect.

There may be three intersecting lines instead of one ; for instance : Suppose the intersecting line laid down on Fig. 2 be Tagetes signata pumila, orange. Then if harmony be desired, plant on each side of the line of Tagetes a line of Dactylis glomerata variegata, then 2, 2 can be filled with scarlet Pelargonium, and 3, 3 with Mignonette, or purple Candytuft, or Stock. Many of the hardy plants enumerated and treated of could be used in this way by those who have no means of growing, or even purchasing, more tender and expensive ones.

By planting such beds with the *élite* of the flower-garden, they are very attractive. Suppose the intersecting line to be Centaurea Ragusina or variegated Pelargonium, with the centre 1 of some crimson or dark-foliaged plant, or a Yucca, or Palm, or Dracæna ; 2, 2 to be crimson—either Pelargonium Stella or Verbena Crimson King ; 3, 3 to be Pelargonium Christine ; the front edging to the crimson being golden Pelargonium, and to the pink a purple or blue. This is a pretty bed, and indicates how scores of different plants could be so contained in such beds.

Mixed Borders.

An example of a mixed border of hardy and half-hardy plants, suitable for the climate of Scotland gene-

rally, as well as the extreme north of England, and one that would be effective anywhere.

The example now to be described is that of the well-known mixed border which Mr. Turnbull annually produces at Bothwell Castle, and which is admitted by all to be the best example of a mixed flower-garden they have seen. The border forms the north boundary of the flower-garden, and extends to 100 yards in length and is 12 feet wide. The plants are generally divided into five lines, which, when the plants are full grown, are not intended to appear as lines at all. The first or front line was, in 1866, dotted over with Phloxes of the *Omniflora* breed, the intervals filled up with scarlet flowering and variegated *Pelargonium*, chiefly *Tom Thumb*, *Frogmore*, and *Brilliant*. In front of these, *Gazania splendens*, variegated *Alyssum*, and *Lobelia speciosa* planted along the whole line. A few plants of *Centaurea Ragusina* were planted at intervals along this dwarf line.

The second line from the front contained a selection of Phloxes—a shade taller than those in front—and mixed with double white *Feverfew*, and yellow *Calceolaria* of sorts.

The third line, chiefly *Double Peach* and *White Rockets*, *Valeriana rubra*, *Delphinium grandiflorum*, Phloxes, and a variety of the dwarf-growing *Dahlias*, early and free bloomers; some of the more dwarf varieties, such as *Titian* and *Alba floribunda*, were planted a little to the front of the taller growers; a few *Gladioluses* and moderate-growing *Tropæolums* were introduced near the *Rockets*, to keep up the show when the *Rockets* were over.

The Fourth line consisted of the lovely *Delphinium formosum*, *D. Barlowii*, and *D. Hendersonii*, with some

tall Phloxes, Veronicas, and *Lythrum variegatum*; and all these again intermixed with free flowing Dahlias of various colours.

The fifth line was made up of some of the tall-growing Phloxes, *Lysimachia tomentosa*, with some Aconitums, Delphiniums, and Dahlias—the latter chiefly of the yellow shades of colour. The plants are not put in so thickly in the back line; for the whole is backed by a wall, which is converted into a splendid back line of beauty by covering it with roses and shrubs, with a liberal use of *Tropæolums*, especially of the crimson shades, which are very telling as a glowing back-ground.

The plants here enumerated do not include the whole of those used, but they form the chief of this grand mixed display, which, where suitable places can be devoted to this style of planting, is as well worthy of imitation as any other style in existence. It is much more practicable generally, and quite as imposing, as any arrangement of tender sub-tropical plants.

Borders composed chiefly of Fine-Foliaged Plants.

There are now so many beautiful silver and golden variegated Pelargoniums, that, in conjunction with the grey and dark-foliaged subjects, an interesting scene might be created in departments of the pleasure-garden without the aid of flowers at all, more especially as there are so many plants of more graceful outline, remarkable also for their foliage properties (without even trenching on the more tender section of sub-tropical plants at all), all of which can be wintered in cool houses, or raised annually from seed.

I shall give an example of how a ribbon border has been for several years made most gay and interesting,

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plant of *Centaurea Ragusina*. The triangles on each
side of the chain of diamonds were planted to match,
and were filled in with *Iresine Herbstii*, with a patch of
the lovely *Dactylis glomerata variegata* in the centre of
each triangle.

1st Row.—Behind this, as a backing, *Pelargonium Christine*.

2d Row.—*Taxus elegantissima* and *Queen Holly*—time about ; both golden, and about 3 feet in height. Between each of these, and a little in advance of them, was a specimen plant of *Centaurea Ragusina*.

3d Row.—A row of green yews with golden tops, and *Acer negunda variegata*, plant for plant, from 4 to 5 feet,—the back line of all being a row of spiral-growing *Conifera*.

The only blooming plants here used were the pink *Pelargonium* and the *Viola*,—the whole of the bloom buds being picked from the others as they appeared. The opinion entertained at Mayfield about the comparative effectiveness of the golden and tricolor *Pelargoniums* for distant effect, corresponds with what we have always held, namely, that the Mrs. Pollock type is quite inferior to the pure golden, such as *Golden Chain* and *Cloth of Gold*.

It must be understood, as the experienced will see, that such border planting is of the highest and most expensive order ; the shrubs alone testify to this. But it should afford encouragement to those who are located in climates not favourable to production of bloom, as it shows how the very gayest of parterre-work can be carried out.

Design No. 1 as a Spring Flower-Garden.

The principle on which the successful grouping of spring-flowering plants should be carried out may be said to be precisely the same, in as far as the contrast and harmony of colours are concerned, as the summer flower-garden. The plants which have been enumerated and treated of for spring-flowering, afford even more distinct shades of colour than are available for summer decoration. This can easily be seen by a reference to

the various sections of plants from which suitable ones are selected, inclusive of bulbs, annuals, and shrubs.

Supposing a group of beds represented by this design to be one which is required gay both summer and spring, the arrangement requires to be distinct from and more temporary than one required gay in spring only; for which season, looking at it as a summer garden also, it could be planted for effect in April and May principally as follows:—

1. Supposing that there is no work of art as a centre, set a light rose-coloured Rhododendron of symmetrical growth (see list of Rhododendrons). Surround this with a row of dwarf Queen or silver Holly,—as a centre, a specimen plant of *Yucca recurva* might do graceful duty all the year round. Then plant the rest of the bed with large plants of *Alyssum saxatile*, yellow, or *Cheiranthus alpinus*, leaving room for an edging of blue Pansy.
- 2, 2, 2, 3, 3, 3.—Planting on the concentric ring system, these would be all planted alike here also, with *Myosotis arvensis* (blue Forget-me-not); edged with *Cheiranthus alpinus* or *C. Marshallii*. The latter should be chosen if the former be the yellow in the centre bed.
- 4, 4, 4, 5, 5, 5.—*Arabis albida*, white, and a great bloomer; edged with red Daisy.
- 6, 6, 6, 7, 7, 7.—Scarlet or red Anemone; edged with white Pansy.

Close to the margin of these beds there may be a row of some dwarf-growing bulbous plants, such as *Crocus*, *Erythronium*, or *Scilla*, which bloom and grow without interfering with the edging plants we have named; and after these earlier flowering things are done blooming, the edging will extend to the extreme margins and take up their place.

These are all very effective plants, and last in bloom a long time. It will be observed that there are no Tulips, or Hyacinths, or upright stiff-growing bulbs

mentioned in this arrangement for beds. In beds by themselves they have a stiff and somewhat formal appearance, and do not keep long in bloom, although nothing can excel the splendour of the colours. We recommend, as mentioned elsewhere, that they be introduced thinly among the plants which have better capabilities for covering the ground. In this case, let No. 1, dwarf yellow, be sprinkled with a tall-growing, bright-coloured Tulip, such as *Imperator rubrorum*.

In the blue Forget-me-not, in beds Nos. 2 and 3, a white or yellow Tulip—we should choose a white, the centre bed being yellow, as the edging here; *Lacandeur* would come in well, or the striped *Royal Standard* Tulip would do very well. In the white beds, Nos. 4 and 5, *Arabis albida*, it being a dwarf-grower, a Hyacinth might be dotted in; a red or bluish variety would tell well with the white. The outside beds of scarlet *Anemone* may be interplanted with the *Narcissus tenuifolius* or *A. albus-plenus*.

By the time these and the outside lines of various-coloured Crocuses, Snowdrops, Scillas, etc., were done blooming, the things planted for the permanent display would be coming into full beauty; and as the blooms of the Tulip, etc., last into the tolerable full bloom of the plants which covered the bed, they form an interesting contrast in character, colour, and habit; and the bulbs, if desired, can be removed at once from the beds as soon as their bloom fades.

To plant this design on the alternate principle.

- 1.—White Forget-me-not, or white *Silene pendula*; edged with dark purple Pansy; and sprinkled with a crimson or scarlet Tulip.
- 2, 2, 2.—Imperial Blue Pansy; edged with yellow *Alyssum* or *Limnantes Douglassii*; and having white-coloured Hyacinth mixed in.

- 3, 3, 3.—*Cheiranthus alpinus* or *C. Marshallii*; edged with *Nemophila insignis*; and Belle Alliance Tulip mixed in the *Cheiranthus*.
- 4, 4, 4.—*Silene pendula*, pink; edged with purple *Primula*; with yellow and red Tulip, such as *Brutus*, mixed in.
- 5, 5, 5.—Blue Forget-me-not; edged with yellow Pansy; with white Tulip or *Narcissus* mixed in.
- 6, 6, 6.—*Anemone coronaria*, scarlet; edged with *Dactylis glomerata variegata*; with *Narcissus tenuifolius* mixed in. The *Dactylis*, in March, April, and May, in its young state, is exquisitely beautiful.
- 7, 7, 7.—Purple Primrose, single; edged with white Daisy; and having white or light-coloured Hyacinth mixed in.

For the sake of variety, it is easy to put a third edging line to these beds, in which case the edgings named above should be double rows, and the finishing line a single row, quite independent of early dwarf-growing bulbs near the margins.

To plant these beds with Annuals and bulbs, which can be quickly produced, and from which category Pansies and Daisies—the chief glory of the spring garden—must not be excluded, plant as follows:—

- 1.—*Lasthenia Californica*, annual, yellow; banded with blue Pansy; edged with white Daisy; having a row of blue Crocus at the edge.
- 2, 2, 2.—White Forget-me-not; edged with *Silene pendula*, rose, banded with purple Pansy; and edged with red Daisy; having a row of yellow Crocus at the margin.
- 3, 3, 3.—*Silene pendula*; banded with *Calandrinia umbellata*; edged with variegated *Arabis lucida*; having a band of *Scilla bifolia* at the edge.
- 4, 4, 4.—Purple Pansy; banded with *Limnanthes Douglassii*; edged with red Daisy.
- 5, 5, 5.—Yellow Pansy; banded with *Nemophila insignis*; edged with *Cerastium tomentosum* or variegated Daisy; with white Crocus round the edge.
- 6, 6, 6.—Blue Forget-me-not; banded with *Limnanthes sulphurea odorata*; edged with red Daisy; with a band of blue Crocus.

7, 7, 7.—Roddish Primula ; banded with sweet Alyssum ; edged with blue Gentian or Nemophila insignis ; with yellow Crocus at the edge. Where very early flowers are an object, Snowdrops might be used for some of the outer edges of the beds, as also Winter Aconite. Of course these beds can be also mixed in with Tulips, Hyacinths, and Narcissus, etc., as previously directed.

These examples of planting are chiefly on the contrasting principle, but there is ample material for carrying out the system of harmony also, as detailed for summer planting. As in the case of summer planting, I have here named representative plants only. The heights and colours, and times of blooming, can be seen where the plants are fully treated of. When such a garden as this is on gravel, we would strongly recommend the edging to be of the various Ivies and early-flowering Heaths, Cotoneaster microphylla, and other plants which can be kept in bounds, and that afford various hues of colour. The centres of the beds afford scope for central objects in each, as described for summer planting ; and the various lists give ample hardy material for this purpose. Some of the Fritillaries are majestic-looking objects, suited for the centre of smaller beds ; and such plants as *Dielytra spectabilis* and *Centaurea Ragusina* can be put out with all safety in the end of March, if wintered hardily.

If such a design as this were in a sunk panel, the slope and top verge may be clothed with even the common Ivy. It would be much easier kept than grass, look well at all seasons, and have a more lively look in winter and early spring than brown mossy grass.

The circles in the recesses afford room for beds of berried and spring-flowering shrubs ; or where the garden

is principally required gay in spring, here is scope for groups of Rhododendrons, with a Standard Rhododendron in the centre, or, what would be better, a spiral tree or shrub. The edging of these beds could be of various-coloured flowering shrubs, or of those with variegated foliage, for which we refer to our lists of these given elsewhere; or, if there was room in the grounds elsewhere, then these may be rock-work and basket time about. The rock-work clothed with spring-flowering plants and pretty foliage, and the baskets, would form a first-rate opportunity of keeping up a constant display of bulbous and other plants,—they being very suitable for Tulips, Hyacinths, etc.

To clothe such a design as No. 1 with beauty in the winter months, if flowers are not required in March, April, and May, a different class of plants, and a somewhat different system of arrangement, can be adopted with success. Admitting that the garden be sunk in a panel, the slope of Ivy is in winter of more importance than ever—the verdure of this useful plant being so conspicuously fresh in the depth of winter. And in the central groups of beds the variegated Ivies could be used with splendid effect, covering their surface with the golden, silver, and green varieties, and then filling in with the various variegated and berried shrubs to suit each ground-work. Ericas, which begin to bloom in the depth of winter, variegated Periwinkles, and many other bright-looking plants, are available as contrasts to such as beds of *Cotoneaster microphylla* with its red berries,—a bed of which dotted with golden Yews or Hollies would be exceedingly pretty. The *Pernettyas*, *Gaultherias*, and other berried plants, as well as such Rhododendrons as are enumerated amongst the very early

flowerers, are also invaluable for winter and very early spring decoration. What could look better than a clump of golden Ivy, with a few plants of the *Yucca recurva pendula* dotted over it?

Following out this order of decoration, a space can be left inside the edgings of the beds and between these centre arrangements, for very early spring-flowering plants, such as Snowdrops, Winter Aconites, Christmas Rose, etc., and Pansies, which bloom more or less amid frost and snow, with such as *Cerastium*, *Ajuga reptans rubra*, *Stachys lanata*, the variegated *Arabis*,—all suitable as edging plants. Vases and baskets could be made up with hardy *Yuccas* and variegated and berried shrubs.

To embrace both winter and spring in such a simple design as this, could be very effectively accomplished by following out the system just indicated, in filling the centres of the beds, leaving a wide margin for hardy-flowering plants, choosing those that are at once early bloomers and most continuous; such as Pansies, Primroses, and *Arabis*—especially the variegated sorts. Most of the Annuals are of little use for this purpose; still the best of them are available for these margins, and in winter a few twigs of evergreens of various hues can be stuck amongst them till spring, which would give a finished look, and protect the Annuals from the severe black frosts which sometimes occur. The earlier-flowering bulbous plants could also be intermixed with Annuals, as directed for beds.

Another and more recent way of giving colour and pretty vegetation to a flower-garden in winter has been adopted in some places; and perhaps most especially at Wardie Lodge, near Edinburgh. Some dozen sorts

of the beautifully coloured posy Kales have been used, with the best possible effects, in combination with such shrubs and early-flowering plants as have just been recommended. There is in these Kales ample variety of character and colour, for a greater and more pleasing effect than can be imagined by those who have never seen them. There is another feature that highly commends the use of Kales, and one that is essential to their being available for the many—namely, their cheapness, and ease in management.

The seeds are sown in April, and when large enough, they are transplanted into poor gravelly soil, in an exposed situation. Here they grow dwarf and hardy, and remain till the summer flowers are cleared away, when the Kales are moved with balls, to take their places in combination with shrubs.

The craving for some dash of colour at this dull season of the year has led to the use of pounded brick, and various-coloured stones and sands,—a cold and dead-looking system of decoration, without anything to commend it but a surface of dead matter, that can only be bearable as a slight auxiliary in some styles of gardens, but never as a substitute for the beauty of living plants and flowers.

Design No. 2 as a Spring Garden.

- 1.—*Myosotis arvensis alba*,—white Forget-me-not; banded with purple Pansy; edged with yellow Pansy; having a ring of yellow *Crocus* close to the verge.
- 2, 2.—Pink *Silene pendula*; banded with white Pansy; edged with *Gentiana verna* or *Nemophila insignis*; with a ring of white *Crocus* or *Snowdrop* close to the edge.
- 3, 3, 4, 4.—Blue Pansy; banded with *Limnanthes Douglasii*; edged

with red Daisy ; ring of blue Crocus or *Scilla bifolia* round the verge.

- 6, 6, 7, 7.—White Pansy ; banded with red Daisy ; edged with *Cerastium tomentosum* ; with a row of *Erythronium dens-canis* round the verge.
- 5, 5, 8, 8.—Yellow Pansy, or *Alyssum saxatile*—(yellow Pansy blooms the earliest)—banded with *Nemophila insignis* ; edged with white Daisy ; a row of blue Crocus next the verge.
- 9, 9, 9, 9.—Scarlet Anemone ; banded with white *Saponaria Calabrica* or perennial Candytuft ; edged with blue Pansy or *Nemophila* ; with a band of white Crocus or Snowdrop.
- 10, 10, 10, 10.—*Myosotis arvensis*—blue Forget-me-not—banded with *Cheiranthus alpinus*—yellow ; edged with purple *Erythronium dens-canis* ; having a ring of yellow Crocus near the edge.
- 11, 11.—Scarlet Intermediate Stock (or *Silene pendula*, or *Saponaria Calabrica*, red) ; banded with white Forget-me-not or Stock ; edged with purple Pansy ; ring of Snowdrop at the edge.

In this arrangement it will be observed that things which are easily got up are chiefly recommended, but at the same time are very showy : white Intermediate Stocks would be our choice in 6, 6, 7, 7, but they are not so easily provided.

In mixing in the bulbous plants, the following arrangement is very effective :—

- 1.—Tall crimson Tulip.
- 2, 2.—*Narcissus tenuifolius*.
- 3, 3, 4, 4.—Yellow Tulip.
- 6, 6, 7, 7.—Red Hyacinth.
- 5, 5, 8, 8.—Crimson Tulip.
- 9, 9, 9, 9.—White *Narcissus*.
- 10, 10, 10, 10.—Yellow and red Tulip.
- 11, 11.—Yellow *Narcissus*.

To plant this on the principle of harmony, band the white *Myosotis* with a pale yellow *Primula*, or *Limnanthes Douglasii*, straw colour, and edge with *Cerastium tomentosum*.

Band the pink *Silene* with white Pansy, and edge with yellow Pansy.

Band the white Pansy with the lilac *Aubrietia deltoidea*, and edge with white Daisy.

Band the yellow Pansy with *Cerastium tomentosum*, and edge with pink Daisy.

Band the scarlet *Anemone* with *Saponaria Calabrica*, and edge with red Daisy.

Band the blue *Myosotis* with purple Pansy, and edge with crimson *Primula*.

Band the scarlet Intermediate Stock with purple Pansy or *Primula*, and edge with red Daisy.

Design No. 3 as a Spring Garden.

- 1.—*Myosotis arvensis alba*, or white Stock ; banded with purple Pansy ; edged with red Daisy.
- 2, 2, 2, 2.—Yellow Pansy, *Alyssum saxatile*, or *Cheiranthus alpinus* ; banded with *Nemophila insignis* ; edged with white Daisy.
- 3, 3.—Blue Pansy ; banded with white *Saponaria* ; edged with *Aubrietia Campbellii* or *grandiflora*.
- 4, 4, 4.—*Silene pendula*—red or pink—or scarlet Stock ; banded with *Dactylis glomerata* ; edged with blue Pansy.
- 5, 5, 5.—Pink Primrose ; banded with *Nemophila insignis* ; edged with *Primula auricula*.
- 6, 6, 6.—Scarlet Intermediate Stock ; banded with white *Myosotis* ; edged with purple Pansy.
- 7, 7, 7.—*Myosotis arvensis*—blue ; banded with *Limnanthes Douglasii* ; edged with *Cerastium tomentosum*.
- 8, 8, 8.—*Dactylis glomerata variegata*, or white Stock ; banded with blue Pansy ; edged with red Daisy.
- 9, 9, 13, 13.—*Collinsia verna*, or purple Pansy ; banded with yellow Pansy ; edged with *Ajuga reptans rubra*.
- 12, 12, 12, 12.—*Lasthenia Californica*, *Alyssum saxatile*, or yellow Pansy ; banded—if the centre be either of the two latter named—with purple *Aubrietia* ; and edged with golden *Arabis* : if the centre be *Lasthenia*, band with purple Pansy ; and edge with *Cerastium* or white Daisy.

- 14, 14, 14, 14.—*Silene pendula* ; banded with purple Primrose or purple Pansy ; edged with *Dactylis* or white Pansy.
 15, 15.—Scarlet Anemone ; banded with purple Primrose or purple Pansy ; edged with red.
 16, 16, 16, 16.—Red Stock ; banded with *Alyssum maritimum* ; edged with blue *Gentiana verna*.

The mixing in of the bulbous plants, and the outside rings of early flowering things, as well as the harmonizing of the colours, can be seen from the other designs, the principle being applicable to this also.

Design No. 4 as a Winter and Spring Garden.

To make this simple group of beds gay for the longest possible time between the season when the autumn flowers are removed and the beginning of June, plant as follows, embracing only such plants as are easily and speedily provided :—

1. In the centre of this bed plant a nice symmetrical specimen, about 4 feet high, of the graceful pyramidal-growing *Cupressus macrocarpa* ; round it some dwarf well-feathered plants of variegated Holly, such as the Golden Queen. Then divide the circle into segments with some dwarf compact dark-green shrub—the common Yew answers well. Trim these dividing lines into lines not too heavy for the size of the bed, but do not give them a clipped appearance. The trimming should be knife, not scissor, work. These dividing lines may be of Ivy of any shade of colour, and can be permanent, with good effect. Then fill up the segments facing the beds 2, 2 with yellow Pansy, and those facing 3, 3 with white Pansy ; leaving room for a double row of red Daisy round the margin of the white Pansy, and a like band of dwarf purple Primrose round the yellow Pansy. Next the verge of the segments with white Pansy, put blue Crocus ; and round the yellow segments and between the purple Primrose and the verge, a row of Snowdrops.
- 2, 2. Blue Pansy, with a specimen of *Skimmia Japonica* in the centre of the bed, edged with white Daisy ; yellow Crocus close to the edge.

- 3, 3. Scarlet Anemone, or scarlet and rose mixed, edged with *Arabis mollis variegata*, with a row of blue *Crocus* or dwarf *Scilla* close to the edge. If these four beds be shortened a little, and a small circle placed between them, fill every alternate circle with a *Thuja aurea* in the centre; surrounded with *Bellis aucubæfolia*—variegated Daisy with red blooms; and the remaining circles with *Euonymus radicans variegatus* in the centre, surrounded with blue *Gentian* and blue *Crocus* mixed; the *Crocus* to flower early and be removed.

The yellow Pansy in the centre bed 1 to have dwarf crimson Tulip mixed in; and in the white Pansy mix red or pink Hyacinth.

- 2, 2. Mix in dwarf yellow *Narcissus*.

- 3, 3. Mix in white Tulip.

Planted thus, these few beds would be more or less gay the whole winter, and beautiful in spring. To fill them with annuals and bulbs,—

Two of the segments in 1 may be filled with white *Forget-me-not*, and two with *Limnanthes Douglasii*; edging the white with *Silene pendula*, pink, and the straw-coloured *Limnanthes* with white Virginian Stock. In the white *Forget-me-not* mix in *Rex Rubrorum Tulip*, and in the *Limnanthes*, *Tournesol Tulip*.

- 2, 2. Opposite the white *Forget-me-not*, plant *Myosotis arvensis*—blue *Forget-me-not*—edged with *Saponaria Calabrica*, and mix in white Hyacinth.

- 3, 3. Opposite the yellow or straw *Limnanthes*, plant *Silene pendula*, pink; edged with *Nemophila insignis*, with *Narcissus albus plenus odoratus* mixed in. Many other annuals can be used,—the heights and colours of which may be seen in the list given as suitable for spring flowering.

It is of course supposed that a mixed border is available for many of the early-blooming plants which are not sufficiently continuous in their period of blooming to be admitted into the decoration of these beds, and the proper place for which is the mixed border.

Design No. 6 as a Spring Garden.

1. Yellow Pansy, or *Alyssum saxatile*, or Alpine Wallflower. The Pansy is preferable.

2. Blue Pansy.
3. Red Daisy; with a bounding line next the bed of white Daisy or *Cerastium tomentosum*. This arrangement would make a splendid display for three months in spring, and give more or less bloom through the winter.

With Annuals.

1. *Limnanthes Douglasii*. 2. *Nemophila insignis*. 3. *Silene pendula*, with the bed kept low; a nice plant of *Thuja aurea* in the centre of 1, and a small *Yucca aloifolia variegata* or *Centaurea* at each angle of the 3, would give variety. Either the *Yucca* or *Centaurea* could be put out in March.

Design No. 7 as a Panel Border in Spring.

Line No. 1.—Irish Yews, green and golden mixed, or green with golden tops.

2. Dwarf Queen Hollies.

These two rows would occupy the space of the three lines, as planted for summer and autumn only, and might be permanent where both seasons are to be embraced.

4. Ground-work of blue Pansy, 5, panels of *Yucca recurva pendula*, surrounded with a band of variegated Ivy, which also might be left as permanent panels, with good effect.
6. Line of yellow Pansy.
7. *Arabis mollis variegata*, or *A. albida*.
8. Red Daisy.
9. Ground-work of white Daisy or *Cerastium tomentosum*, with panels 10, small circles of purple Pansy.
11. Line of variegated Daisy with red flowers, or the dark-foliaged *Ajuga reptans rubra*.

Such an arrangement as the above would give a long and effective display of bloom, from plants not difficult nor expensive to procure, if we except the shrubs, and for which cheaper ones could be substituted.

Bulbs can be mixed in here, as shown elsewhere.

We are passing some of these designs, as some of them illustrate the others sufficiently, especially as we have arranged them all for the summer season.

Ribbon Borders for Winter and Spring.

- | | |
|---|---|
| 1. Golden Arabis, or Bellis aucu-
bæfolia. | 5. Blue Pansy. |
| 2. White Daisy. | 6. Dark purple Pansy. |
| 3. Red Daisy. | 7. Dwarf variegated Euonymus. |
| 4. Yellow Pansy. | 8. Tritoma grandis and dark
green Shrub alternately. |
-
- | | |
|-------------------------------|---|
| 1. Red Daisy. | 5. Dark purple Pansy, sunk a
little. |
| 2. White Pansy. | 6. Scarlet Anemone. |
| 3. Blue Pansy, sunk a little. | 7 & 8. Same as in previous example. |
| 4. Yellow Pansy. | |
-
- | | |
|--------------------------|----------------------------|
| 1. Cerastium tomentosum. | 4. Blue Pansy. |
| 2. Red or pink Daisy. | 5. Dark purple Pansy. |
| 3. Yellow Pansy. | 6. Variegated dwarf shrub. |
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Annuals.

- | | |
|--------------------------|-------------------------|
| 1. Nemophila insignis. | 4. Blue Forget-me-not. |
| 2. Limnanthes Douglasii. | 5. White Forget-me-not. |
| 3. Silene pendula. | 6. Collinsia verna. |

Bulbs, such as Tulips, Hyacinths, Narcissus, etc., can be mixed in along these lines, particularly when the borders are composed of Annuals. Many other plants may be used in the getting up of such borders, but those named are the most popular, effective, and easily managed and provided.

CHAPTER XIII.

PLANTING OUT—WATERING—IMPROVEMENT OF SOIL.

Planting out.—The beds should be forked over and well pulverized to the depth of 8 inches or 1 foot a few days before it is intended to begin planting. Where the soil is heavy, and with a tendency to cake and become lumpy, this operation is best performed after a slight rain, and when the weather is warm and sunny. This is, in fact, trapping the sunbeams—at least their genial warmth—and digging them into the flower-beds. The levelling and raking of the beds into perfect outline should follow immediately upon the pulverizing operation. There are no better tools for these operations than Parke's steel digging-fork, and an iron rake with angular-shaped teeth. A slight dressing of quicklime forked in is very beneficial to heavy soils, both chemically and mechanically. By raking off all unsightly objects, such as stones, pieces of stick, etc., that come to the surface, there will be less need for raking much after the beds are planted.

The outline into which the beds are formed must to some extent be guided by circumstances, as well as taste, as to the appearance of an individual bed. Where the group of beds to be planted is on grass, and at a considerable distance apart, so that the outline of one bed does not hide that of another or any part of it,

then I recommend the beds to be well elevated, and to start rather abruptly from the edge of the grass, but always showing a clear edging uncovered with soil, to the extent of an inch or more. The centre of a bed, say, for instance, a circle 14 feet in diameter, should at its centre be about 15 inches above the level of the grass in such a group as is now being considered. On the other hand, wherever a group of beds is divided from each other by narrower spaces of either gravel or grass, the contour of the beds must be flatter if one bed is not in some degree to interfere with getting a proper view of the other. This refers with much force to a group of beds which are chiefly viewed and studied from a level equal to themselves. When to be viewed from an eminence—the best position from which to view a flower-garden *en masse*—it does not matter so much, though even then the elevation of the beds should be considerably moderated in comparison to what is very effective when beds are wider apart.

The different varieties of plants should be assorted and placed at convenient points, as the plan for planting and the nature of the garden may indicate; and if men are to be called in from other departments to assist in planting who are not well acquainted with plants, each group should have a legible label attached to it. These simple matters will prevent confusion, and save a deal of ordering and instructions when planting is being proceeded with. To expedite and prevent confusion and delays while the work is being done, a working plan of every bed should be previously prepared; and when the planting begins, the labour should, as much as possible, be divided. Suppose that in large establishments there are available, say nine men, and

that the plants are located not far off, and water handy, six of the men may be put in pairs as planters; the other three to be employed in bringing the plants and setting them down conveniently to each bed, watering, and clearing out of the way empty pots, boxes, etc. At the head of all should be the master or foreman, or both, thoroughly conversant with the matured working plans, and ready to direct, correct, and instruct with both tongue and hands, as may be required. In this way the work goes on like clockwork, and confusion and blunders are avoided. Variety of circumstances may of course necessitate variety of arrangement; but every gardener knows how important it is to get this work not only well but speedily executed, while a hundred operations require attention in other departments of a garden establishment at this busy season.

In general the third week of May is early enough to begin planting. This, however, ought to be entirely regulated by circumstances, the chief of which are the general climate of the district, the position as to shelter of the flower-garden, and the condition of the plants, as well as the character of individual seasons. In favoured localities and in dry warm soils, with well hardened-off plants, planting may generally be completed by the end of May, with the exception of very tender plants; but where circumstances are the reverse of these, the first week of June is a safer time to begin. It is much better to be a week late than to remove plants out of sheltered positions, when they are standing close together, into the open beds, to receive a check from either cold winds or a night's frost sufficient to affect their wellbeing the whole season.

It is usual in dry seasons to wait for rain before a

commencement is made; but, so far as my own experience and observation are concerned, this is not necessary, nor even desirable. Plants that are put in when the ground is rather dry than otherwise, and that receive one good watering generally, start better into growth than when the ground is wet and sticky. When the ground is dry, the operation can be gone about with much more comfort and speed, and the soil runs in more freely about and among the roots than when it is wet. The wet soil and roots, too, are apt to be pressed into hardened lumps instead of being properly distributed the one amongst the other.

A very important matter is to have the balls of the plants in a proper condition of moisture. A medium is what should be aimed at. If planted when dry, it is most difficult to turn those in pots out with speed, or to properly moisten the ball after it is put in the ground, for in watering, the water escapes round it in the newly loosened soil, leaving the dry ball just as it was when planted; and, under such circumstances, in dry weather the plants receive a serious check. When, on the other hand, the balls are too wet, they are very apt to be broken and squeezed together in an unnatural way. The best way in dry weather is to water all plants in pots the evening before planting, so that in the morning they are in a medium state of moistness, which is the proper state for both speedy and safe planting. This of course applies to plants in pots with more force than to those growing in boxes or beds, to shake out which comfortably—in the case of those which cannot well be lifted with ball—the soil ought to be rather dry than otherwise. All such, as well as those lifted from beds with balls, are less likely to suffer from inefficient

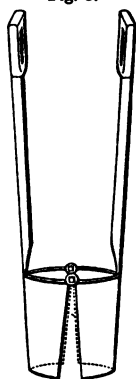
watering after being planted than are those turned out of pots.

All plants that have roots hanging out freely from their balls, or that are entirely shaken out of the soil, should, in the process of planting, have these roots let down deeply into the ground. This is of great advantage, particularly if a season of drought follows the time of planting. Indeed it is preferable to plant the majority of the plants deeply rather than the reverse, especially when the soil is dry and light.

For despatch and correctness in planting, much depends on the manner in which the work is begun and carried out. Some person perfectly conversant with the planting design first takes a measuring rod, and marks a ring all round the beds where the first line of the body of the bed is to be planted, preserving the exact shape of the bed, or any design which is to form the centre. This at once marks off the limits to which the centre plants are to extend, and at the same time the space to be taken up with those which are to form the edging. If the bed be circular, the outside ring of the centre plants should be planted first, and ring after ring put in, finishing in the centre. This is a simple way of preserving outline in each ring or row of plants. Then the inside row of the edging, if to be formed of two lines, is planted first, and the last line next the box, or grass, or stone edging put in last of all, with particular exactness as to outline. In planting large beds, where the workman must step on to them to plant the centre, he should be furnished with pieces of light board on which to stand, to prevent trampling the soil, so doing it harm, as well as spoiling its equality of surface. In planting beds which in shape approach the square or parallelo-

gram, the line should always be used. For planting all plants with balls attached to them, we would strongly recommend the use of a tool not much known except on a large scale for transplanting—namely, a miniature M'Glashan's transplanting machine (fig. 3).

Fig. 3.



With this a man can take out an opening big enough for plants turned out of 4 and 6 inch pots just as quickly as one stroke of a trowel can be made. This tool has been long used by Mr Norval, gardener to the Earl of Galloway, for flower-gardening and other purposes, and it was he who first altered the handles from some original forms of the same tool into the short spade-like handle, and called my attention to its value and capabilities. It is peculiarly suitable for amateurs, and even ladies, as

it saves a deal of stooping and hard work; and it deserves to be better known and more generally in use than it is. It lifts the soil out, and lays it down on the off-side of the line, ready to be placed round the roots of the plant by the persons that follow to plant. For long stretches of borders this simple tool is invaluable, and the best way to use it is to stretch the line along the border exactly where the stems of the plants are to be, and mark the soil by running a rod with a notch in the end of it along the line. The line is then removed, and the mark shows where the centres of the pits are to be; and with this tool one man well up at handling it can keep four planters going. A small-sized instrument of the same sort is first-rate for planting bulbs in beds in the autumn, much to be preferred to a dibble, which in damp soil leaves the holes hard and

compressed at the sides, and consequently much more likely to be a receptacle for standing water in times of heavy rains.

Every plant should have a good soaking of water immediately each bed is planted. If the whole bed be thoroughly soaked, all the better; and as soon as the surface becomes moderately dry, let it be Dutch-hoed, so as to leave a loose surface and prevent evaporation. If raked at all, avoid the too common practice of making the surface of the beds as smooth almost as the surface of a barrel of flour. If the ground be nicely regulated, removing all unsightly objects which may come to the surface in planting, it is much to be preferred to the close solid surface left by fine raking, and which the first heavy shower converts into a crust, and a conductor of both heat and moisture out of the soil.

Where the beds are much exposed to winds, it is a good plan to plant with the tops of the plants leaning away from the direction from which winds most prevail. When so fixed in the ground, they are less likely to get broken. This applies most to *Pelargoniums*, and such plants as cannot well be pegged down at once—a process which I do not recommend, except as a security against breakage. *Calceolarias* are very liable to damage from high winds, and it is a good plan to stick some stiff, twiggy, leafless spruce branches round each plant as put in. The plants grow amongst and over them, and hide them while they derive support from them. This is a good plan in the case of all the more brittle sorts of plants. When the soil is naturally poor and dry, the plants will be greatly benefited by mulching the surface of the beds with short manure to the depth of an inch. The manure from an old mushroom bed

is excellent for this purpose ; and where this cannot well be afforded, and moss is easily got, a surfacing of it prevents evaporation, and looks very neat and pretty. Calceolarias, particularly, should be treated thus, as they are very impatient of extremes of drought and moisture.

On cold heavy soils, if a heap of light rich soil can be prepared before planting begins, it will help greatly to give the plants a quick start, if a handful or two is put round each plant. The planter can use this handily out of a strong basket with a handle to it, so that it can be quickly and easily moved along with him as he proceeds with planting.

When the work is thus performed, and the stock of plants healthy and hardy, it is astonishing how few blanks occur either from breakage or any other death cause. At the same time, a reserve stock of all plants, according to the number used, should be formed to fill up any blanks that may occur. If circumstances permit, the reserves are best potted into 5 or 6 inch pots, and placed in a sheltered but open place. They are thus in a position to make up gaps in the course of summer without receiving a check when planted.

Watering.—In the whole round of amateur gardening, the operation of watering flowering plants is perhaps the most inefficiently performed, though the most common of all. Outdoor watering is, as far as I have been able to observe, much more frequently resorted to in the gardens of amateurs than in extensive establishments which come under the supervision of professional gardeners. This could perhaps be accounted for by more reasons than one. In the first place,

watering after a certain fashion forms to the inexperienced one of the most pleasing recreations which his spare morning and evening hours can afford, especially in those cases where, from vague ideas regarding it, the operation is deprived of its completeness and usefulness, which, when thoroughly understood and practised, renders the watering-pots the implements of heavy drudgery, to be as seldom called into operation as possible. In fact, the general opinion of the most experienced is, that outdoor watering, except in particular cases, is better left alone, unless time and water can be afforded to do it much more copiously than it is generally performed. The watering-pots are resorted to only during hot parching weather, when plants show signs of languishing, and are apparently not making any progress. In the next place, many who regularly have recourse with pleasure and delight to the operation of watering, are, judging from the way in which it is performed, entirely ignorant of the evils consequent on its inefficient performance.

Water being the chief vehicle through which food is conveyed to plants from the soil, and in the atmosphere the preventive of evaporation from the foliage, in order to be beneficial in these respects, must be administered in such quantity as shall penetrate sufficiently deep into the ground to reach the roots, in contradistinction to the too common method of merely painting or sprinkling the surface of the soil; and as far as watering can affect the atmosphere, and feed and preserve the strength of plants in that manner during hot weather, its effects must be very limited indeed.

A mere sprinkling of the surface of the soil is productive of more evil than good. In its necessary rapid

evaporation the soil is robbed of its heat, and on stiff soils particularly, it leaves the surface in a hard and caked condition, rendering it a better heat conductor than when loose and porous; and in proportion as the heat-conducting power of the soil is increased, so also is the evaporation of moisture. Therefore, not only do surface sprinklings evaporate with the rising of the sun without ever having reached the roots, or materially benefited the plants, but the natural moisture which may rise by capillary attraction is also more likely to evaporate by the compact surface produced by daily sprinkling.

These considerations render it almost superfluous to give detailed advice as to the proper quantity or way of administering water during hot scorching weather; and the natural inference will be, that watering, to be of any material service, must be given in quantity sufficient to reach down to the roots of plants, and that the less frequent its application is made necessary—by keeping the surface of the soil well stirred and loose, to prevent evaporation—the better. From what has been said, it will not be difficult to understand why so much difference of opinion exists as to whether artificial watering during a dry season is beneficial or injurious. One who thoroughly understands what he is about, and waters—when he does water—almost to irrigation, and plies the Dutch hoe among his crops the next morning, is in a position to assert that his plants do derive unmistakeable benefit from watering. Another, who rests content with merely sprinkling the surface of the soil frequently, leaving it meanwhile to become a hardened crust, may assert, with equal truth, that watering appears to do more harm than good.

But to be practical : Take, for instance, a bed of *Calceolareas* or *Verbenas* in a hot scorching June or July, which have been planted out some three weeks before—perhaps when the weather was moist and showery : a parching drought overtakes them, and continues—the piercing rays of the sun drawing with his heating power every drop of moisture from plant and soil. Let the watering be infinitesimally and frequently, leaving the surface caked and unstirred. Under such treatment the plants get hard and wiry, and seem to become set altogether, blooming prematurely and not covering the bed ; and if it were a bed of early celery, it would all run to seed, and be useless. But give sufficient water to thoroughly soak the bed of earth, and then let the surface soil be kept well stirred ; in six or eight days renew the dose of water and the stirring : the result will be, that the plants get greener, and creep over the surface of the bed, gradually hiding the surface of the soil, and bursting into bloom.

Now, the work incurred in mere sprinkling, and the water wasted, is quite as serious an affair from the labour point of view as an efficient watering once a week ; and in the one case the labour is worse than in vain, while in the other the end in view is gained. An evening dewing over the foliage is beneficial, if the root watering is as efficient as has been described.

In the case of seeds sown during severe drought, it not unfrequently happens that they are watered after being sown, with the view of causing them to germinate ; and under such circumstances it sometimes occurs, from the production of extreme alternations of moisture and drought, to which they are subjected every four and twenty hours, that they perish altogether. To prevent

this, and to secure with certainty and rapidity a healthy germination, the bed should be well watered, both before and after the seed is sown, and then shaded from the sun with evergreen boughs or mats, and till the seed sprouts and the young plants appear above ground, when one more good soaking ensures their success.

Regarding the watering of plants immediately after being planted out, I refer to what has been said under the heading 'planting out;' and here I offer a few observations on the application of manure in a liquid form. This is of great importance during seasons of drought; and though this does not apply so forcibly to flower-gardening, it does to some extent, especially on poor light soils and in dry localities. Plants are incapable of deriving nourishment or of taking up food of any kind, unless it is presented to them in a liquid or gaseous form; and it is because of this that we so often see and hear of the most satisfactory results arising from the application of manure in a liquid form. Manure can be applied thus more equally through the soil, and at a time when the cultivator finds that it will be of the greatest moment to stimulate his crop. The real value of manure in a liquid form is now more clearly seen and felt; and it requires no prophet to foresee that the day will yet arrive when the sewage of our mighty hives of industry will be turned to a more profitable account than at present. It has been computed that 1500 tons of liquid, highly impregnated with animal and vegetable matter, and, consequently, of great manurial value, finds its way daily into the Thames through the sewers of London. It may be supposed that this loss of sewage has little or no bearing on the manuring of flower-beds and borders; but the very same loss is

going on continually in many gardens where, it may be, a considerable outlay has to be made to manure the beds, especially in the case of small places where rotten leaves and other manure are not attainable, and all the while the whole drainage is being lost. From this very source, in combination with collected refuse, in the shape of vegetable trimmings, the old flowering plants themselves, and all such matter that can be more or less collected about a garden, a fine manure-heap might be collected yearly. The sewage, if collected into a tank, could be poured over such refuse heaps when turned over, and a layer of common garden soil placed over all, to be mixed in with the heap at the next turning. Such a compost as this, turned over several times through the winter, would preserve a quantity of excellent manure for applying to the beds in spring. No fear need be entertained that the rains will wash the manurial elements out of such a heap of soil, for chemistry proves that the earth holds its plant-feeding elements in suspension in spite of the passage of water through it. At the same time, where such deposits can be protected from heavy rains, it is better; for in turning such refuse heaps over, they mix much better when moderately dry than when soaked with heavy rains. Such deposits as can thus be preserved are invaluable for mixing with flower-beds that are naturally poor, and in which most flower-garden plants will not continue to bloom satisfactorily, unless well manured and watered in dry seasons. In the case of heavy soils there can be no better absorbant of sewage than a heap of burned clay or charred refuse of any sort; and when mixed into heavy soils by means of such vehicles, the effect is beneficial, both mechanically and chemically.

The Improvement of Clayey Soil by Burning.—

Having in this work recommended in several cases the use of burnt clayey soil, it has been considered advisable, for the benefit of those who are placed in such circumstances as to be unable to procure sufficient good loamy soil to make flower-beds up where the natural soil is very heavy, cold, and adhesive, to explain how the process can be successfully accomplished. Having had a great deal of experience in burning clayey soil, and applied it largely in the making-up of composts for both flowers and vegetables with the best results, I can strongly recommend the practice to all whom it may concern, in the case of flower-beds.

In describing the process, I do not know that I can do better than quote from a paper I wrote on the subject as applied to the improvement of vegetable gardens, and which of course applies with equal force to flower-beds. To describe the operation of burning, we may commence by saying that the garden was previously well drained. The next consideration was the preservation of that portion of the surface soil which, by the application of manure and the action of the weather, had been slightly reclaimed from its original clayey state, and which, for the most part, was found in the top spit. It was desirable to preserve this portion of the soil without burning it, in order to mix it with the more stubborn, after it had passed through the fiery ordeal. The site for the fire on any given piece of ground was first trenched, taking out the bottom soil, and turning the top into the bottom. On this site, in the centre of the piece of ground, the fire was commenced. Wood which was only fit for charring, or firewood, which is generally plentiful about a gentleman's domain, or easily pur-

chased, was exclusively used. Coal, except near to pits, is more costly, and is no more effective than wood; while the chemical advantage derived from the wood, in the shape of potash, is worthy of consideration. The site for the fire being ready, form a little stack of wood about 5 feet in diameter at the base, tapering to a cone of about equal height, commencing with dry brush-wood or fagots in the centre, and finishing off with thick wood set on end round the sides. All round this stack lay on a coating of clay, to the thickness of a foot. It is best to pack it on in lumps as it comes out of the trenches. When this is done, set fire to the centre of the pile, which can easily be done from the top, leaving the vent open for a time. It will be found that before the wood is consumed, the clay catches fire and burns freely. As soon as the first layer burns nearly through, another should be added, which, in its turn, soon burns through also. The pile should then be broken down with an iron-handled hoe, for the double purpose of laying more wood crossways on it, to quicken it, and getting a larger basis of operation. Having a sufficient amount of clay close to the fire before breaking it down, let the surface of the fresh-applied wood and all round the sides be speedily covered over with a layer of it, otherwise the wood will soon be consumed without being of much service. As soon as the soil gets burned to the surface, layer after layer can be added till it becomes necessary to again break down and widen the fire, adding more wood every time this is done, for the purpose of quickening the process of burning.

The process is an exceedingly simple one; any rough wood is sufficient for the purpose where small coal can be cheaply procured. It is an improvement to add a

little of the latter with the wood every time more fuel is required. When the fire is well set agoing and gets powerful, it does not require being broken down so frequently; and a coating of clay 2 feet deep may be put on at a time, while it can be left to become a glowing heap of fire without any attention for the time.

As soon as the desired quantity has been thus burned, and allowed to become sufficiently cool to allow its being spread all over the surface from whence it was taken, it is spread equally, and a quantity of any vegetable refuse, such as an old garden rubbish heap, road scrapings, leaf-mould, the scourings of ditches, containing principally leaves and decayed grass, and with all, some manure, is spread over the surface of all, and so the burned earth—now like finely pounded bricks—is placed between such vegetable deposits and the best of the original soil. Then a trench is opened at one end, and the whole carefully mixed and turned over, to form a free deep staple of soil, fit to grow almost anything well, and flower-garden plants in particular. In the process of burning and mixing, the subsoil, which is apt to get hard and consolidated, should be broken up and left rough as each trench is turned over.

To dwell on the desirability of thus having a tough wet clayey soil converted into a deep porous one, is not necessary. The merest tyro can easily conceive how the process improves such soils mechanically by reducing its most tenacious part to something like brick dust, which, when well mixed with the best portion of the soil and vegetable refuse, gives a soil at once much more easily managed, and more productive. The chemical changes which take place are as obvious as those that are mechanical. The foreign matters in

clayey soils contain potash, soda, and a few others. All these constituents are found when vegetable produce is burned; but often they are to be found in such combinations in the soil as to be comparatively useless, and the question is how to get at these profitably. In burning clay, the potash is rendered soluble, as well as other fertilising constituents which plants require. On the other hand, burned clay has the power of absorbing ammonia in large quantities from the air and rains. The large portion of potash which is derived from burning with wood is also of no inconsiderable importance.

In the case of small owners who find it very difficult in clayey districts to procure proper soil for flower-beds, as well as shrubbery borders, this is a process far too much neglected. And while a fruitless search is being made for loam of a proper texture, the clay itself may be passed through this fiery ordeal and mixed with vegetable refuse; and when to be used for *Rhododendrons* and other American peat-loving plants, a portion of sandstone may be added. For such plants as love coolness, but no standing water, this plan is especially to be recommended; for in winter the open body of soil allows rains to pass off into drains, and in summer the burned clay is a capital absorbent of moisture—so laying up a store of it against a time of drought. The finest beds of the large globe-flowering *Pelargoniums*, such as old *Compactum* and *Shrubland superb*, I ever saw, were grown in soil composed largely of burned clay.

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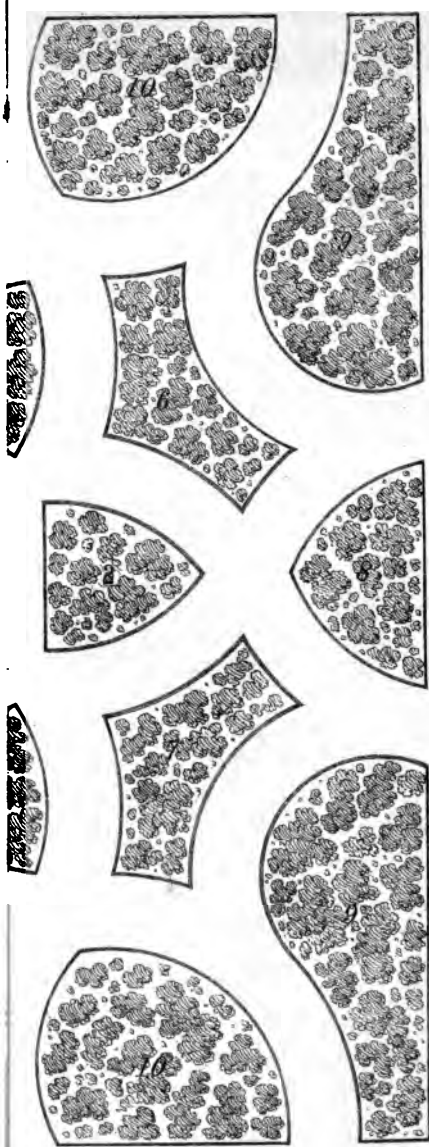
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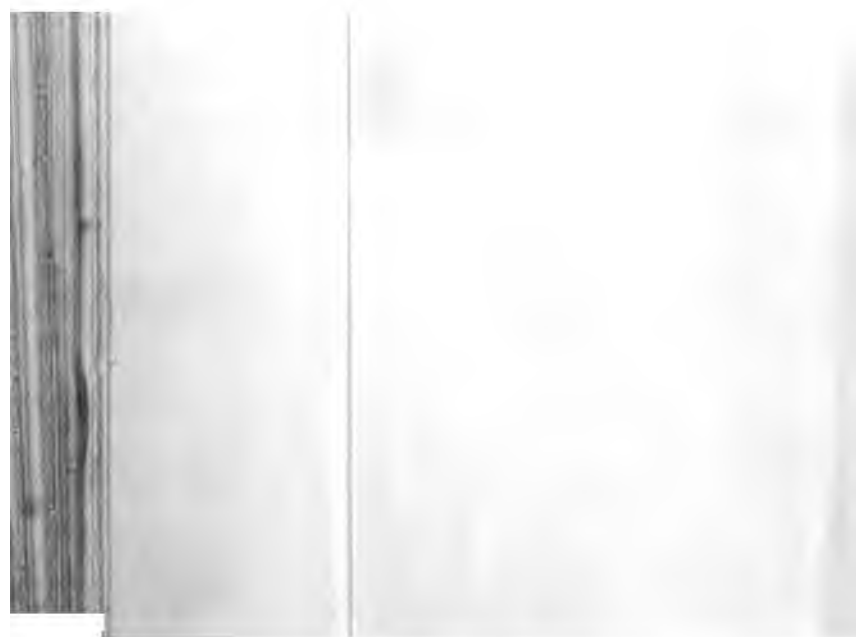
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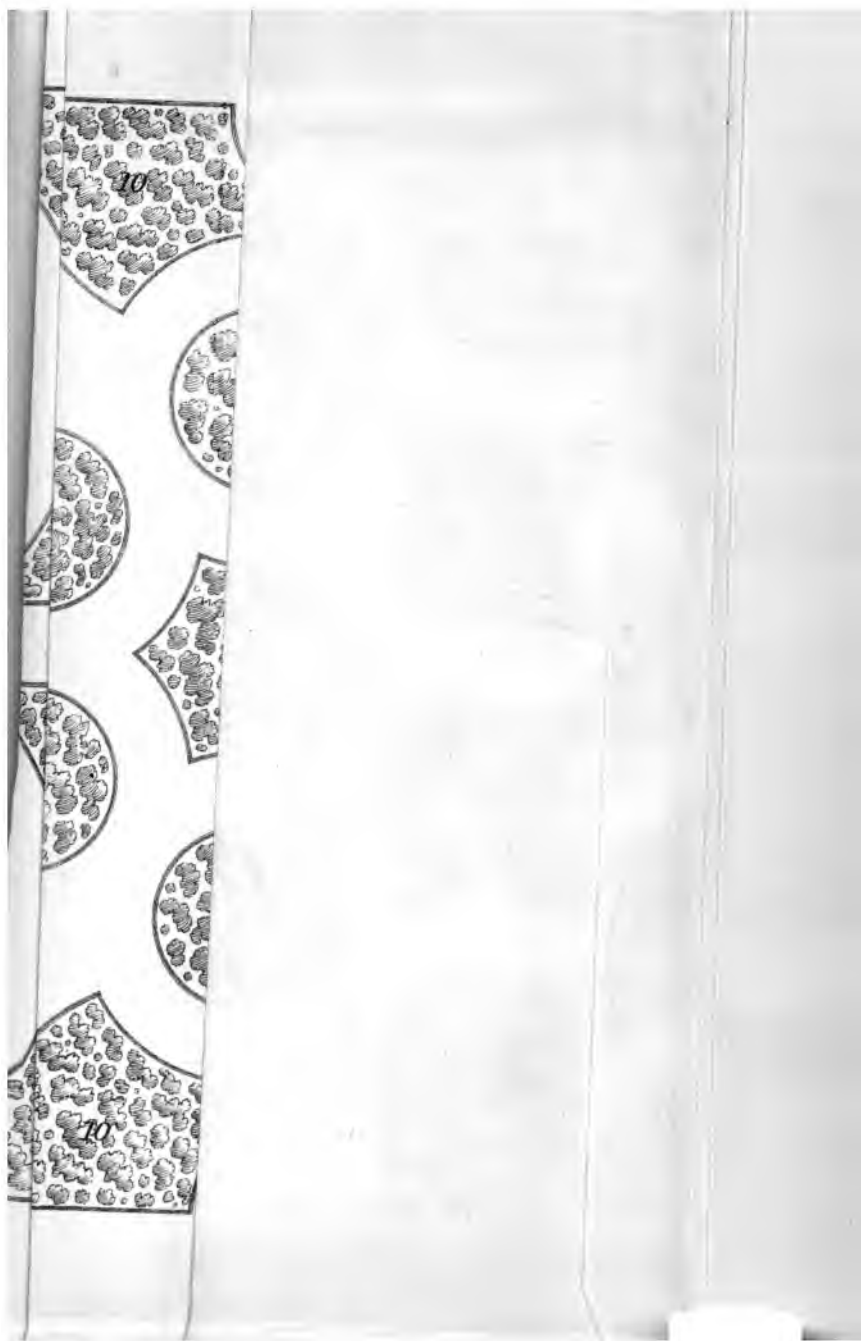
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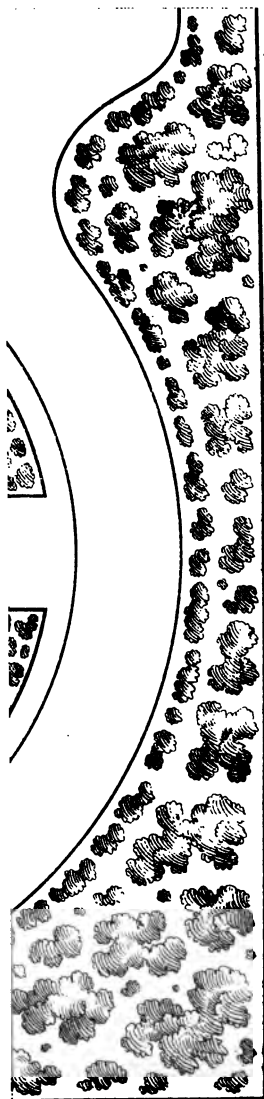








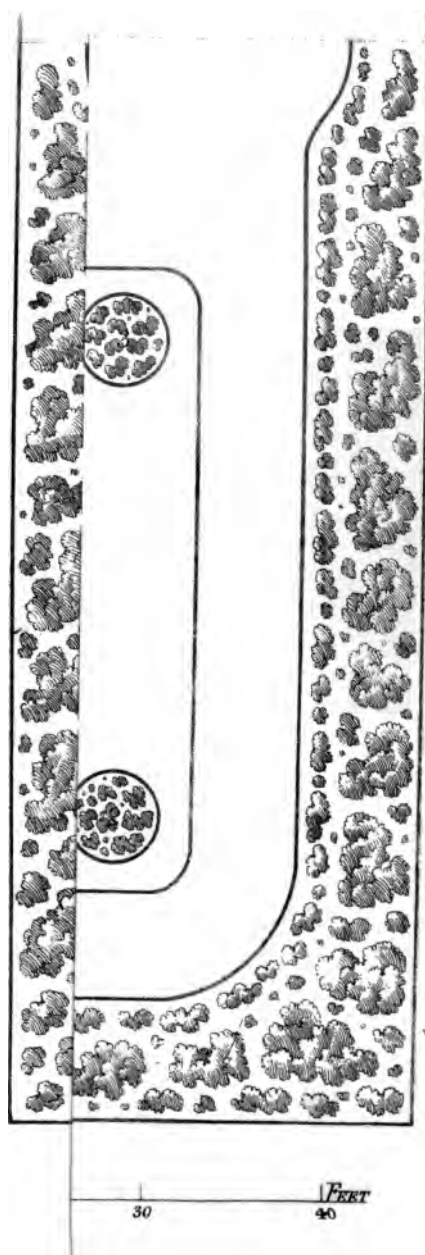
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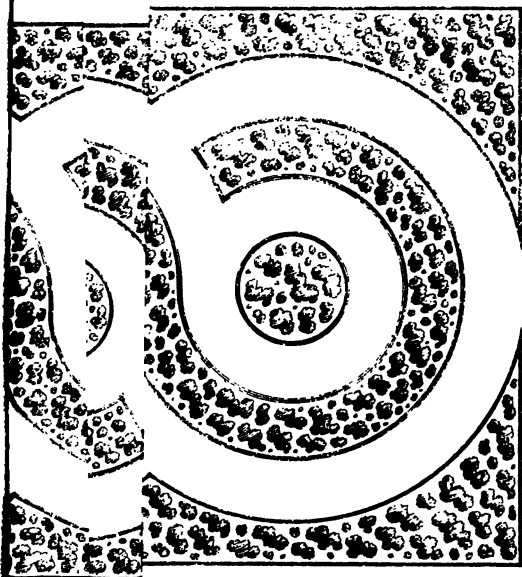
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